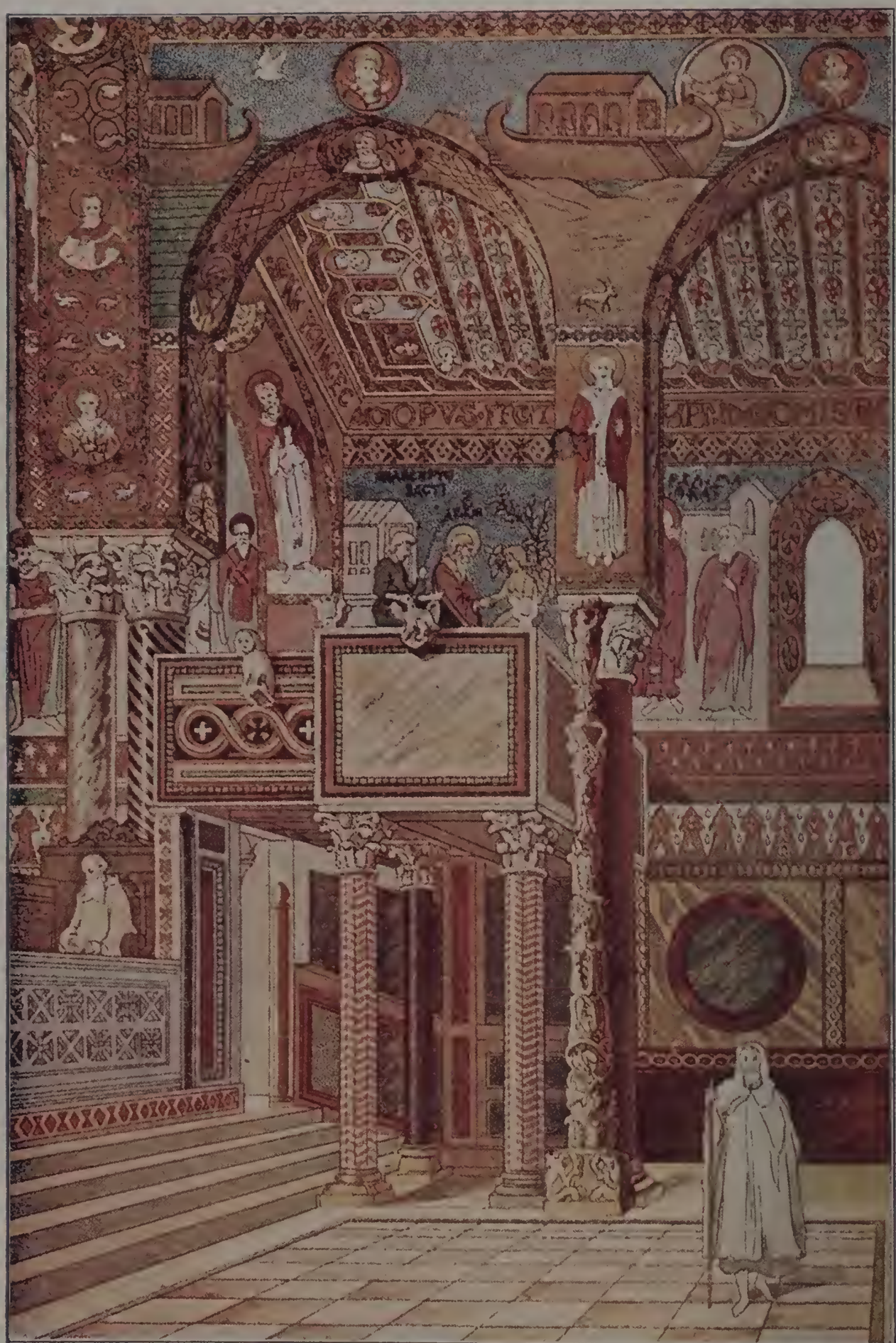
THE LIBRARY OF CONGRESS
1800

Class AE5

Book U47

Copyright No.

COPYRIGHT DEPOSIT.



PALATINE CHAPEL AT PALERMO

THE UNITED EDITORS PERPETUAL ENCYCLOPEDIA

A LIBRARY OF UNIVERSAL KNOWLEDGE
COMBINED WITH AN
UNABRIDGED DICTIONARY
OF THE
ENGLISH LANGUAGE

MANAGING EDITOR
GEORGE EDWIN RINES
ASSISTED BY MORE THAN FIVE HUNDRED OF THE MOST
EMINENT SCHOLARS AND SPECIALISTS

THIRTY VOLUMES
ILLUSTRATED

UNITED EDITORS ASSOCIATION
NEW YORK—CHICAGO
MDCCCCXI

AE5
.U47

Copyright, 1909
by
The United Editors Association

Copyright, 1911
by
The United Editors Association

© Cl. A297620
No. 1.

SCHEME OF SOUND SYMBOLS

FOR THE PRONUNCIATION OF WORDS.

Note.—(-) is the mark dividing words respelt phonetically into syllables; (′), the accent indicating on which syllable or syllables the accent or stress of the voice is to be placed.

Sound-symbols employed in Respelling.	Representing the Sounds as exemplified in the Words.	Words respelt with Sound-symbols and Marks for Pronunciation.
ā	mate, fate, fail, aye	*māt, fāt, fāl, ā.*
ă	mat, fat	*măt, făt.*
â	far, calm, father	*fâr, kâm, fâ′thėr.*
ä	care, fair	*cär, fär.*
aw	fall, laud, law	*fawl, lawd, law.*
ē	mete, meat, feet, free	*mēt, mēt, fēt, frē.*
ĕ	met, bed	*mĕt, bĕd.*
ė	her, stir, heard, cur	*hėr. stėr, hėrd, kėr.*
ī	pine, ply, height	*pīn, plī, hīt.*
ĭ	pin, nymph, ability	*pĭn, nĭmf, ă-bĭl′ĭ-tĭ.*
ō	note, toll, soul	*nōt, tōl, sōl.*
ŏ	not, plot	*nŏt, plŏt.*
ô	move, smooth	*môv, smôth.*
ö	Goethe (similar to *e* in her)	*gö′tėh.*
ow	noun, bough, cow	*nown, bow, kow.*
oy	boy, boil	*boy, boyl.*
ū	pure, dew, few	*pūr, dū, fū.*
ŭ	bud, come, tough	*bŭd, kŭm, tŭf.*
û	full, push, good	*fûl, pûsh, gûd.*
ü	French plume, Scotch guid	*plüm, güd.*
ch	chair, match	*chär, măch.*
ċh	German buch, Heidelberg, Scotch loch (guttural)	*bôċh, hī′dėl-bĕrċh, lŏċh.*
g	game, go, gun	*gām, gō, gŭn.*
j	judge, gem, gin	*jŭj, jĕm, jĭn.*
k	king, cat, cot, cut	*kĭng, kăt, kŏt, kŭt.*
s	sit, scene, cell, city, cypress	*sĭt, sēn, sĕl, sĭt′ĭ, sī′prĕs.*
sh	shun, ambition	*shŭn, ăm-bĭsh′ŭn.*
th	thing, breath	*thĭng, brĕth.*
ṫh	though, breathe	*ṫhō, brēṫh.*
z	zeal, maze, muse	*zēl, māz, mūz.*
zh	azure, vision	*ăzh′ėr, vĭzh′ŭn.*

BAILLY, *bā'lĭ*, JEAN SYLVAIN: 1736, Sept. 15—1793, Nov. 11; b. Paris: distinguished French savant, pres. of the national assembly of 1789, and mayor of Paris. Originally intended by his father for an artist, he turned first to literature, then to astronomy. In 1763, B. presented to the Académie des Sciences his *Lunar Observations;* 1766, appeared his *Essay on the Satellites of Jupiter, with Tables of their Motions;* and 1771, a treatise on the light of these satellites, remarkable for the profundity of its astronomical views, and which classed him at once among the greatest astronomers of his time. His historico-scientific works, especially his *History of Indian Astronomy,* while full of learning and ingenuity, and written with great elegance, present speculations now considered fantastic. In 1777, he published his *Letters on the Origin of the Sciences;* and 1799, his *Atlantis of Plato.* In 1784, he was elected a member of the Académie Française; and in the following year, of the Académie des Inscriptions. The *éloges* which he wrote about this period for the Académie des Sciences on Charles V., Molière, Corneille, Lacaille, Leibnitz, Cook, and Gresset, were very highly praised. Fontenelle was the only Frenchman before him who had been honored with membership in the three académies at once. The revolution interrupted his peaceful studies. During the earlier part of it, he had a very prominent position. Elected pres. of the national assembly, 1789, June 17, and mayor of Paris July 15, he officiated with great integrity; lost his popularity by allowing the National Guard to fire on the masses assembled in the Champ de Mars, 1791, July 17, to demand the dethronement of the king. Considering it impossible to satisfy either party, B. withdrew altogether from public affairs, and went to live first at Nantes, afterwards with his friend Laplace at Melun. Here he was seized by the Jacobin soldiery, and brought to Paris, where he was accused of being a royalist conspirator, condemned, and put to death with the usual Jacobin preliminary of savage insult. Among his papers were found, and afterwards published, an *Essay on the Origin of Fables and Ancient Religions* (1799), and *Memoirs of the Revolution by an Eye-witness* (1804).

BAILMENT [from the French word *bailler*, to put in the hands of, to deliver]: in *law*, a delivery of something of a personal nature to one party by another, with the understanding that it is to be held in accord with the purpose or object of the delivery, and to be returned, or delivered over when that purpose or object shall have been accomplished. The party making the first delivery is called the bailor, and the party receiving, the bailee. A delivery of goods in trust, upon a contract, either expressed or implied, that the trust shall be faithfully executed by the bailee, is also a Bailment.

Bailments may be divided into three kinds: First, those for the benefit of the bailor, or some person whom he represents. Second, those for the benefit of the bailee, or some person represented by him. Third, those which are for the benefit of both parties. In regard to the first of these classes, the bailee is required to exercise only slight care of the article

delivered, and is responsible only for gross neglect. In the second, he is required to exercise great care, and is responsible even for slight neglect. In the third, he is required to exercise ordinary care, and is responsible for ordinary neglect. There is also a supplementary class in which the bailee is responsible for loss even where there is no neglect on his part, and becomes, as it were, with certain exceptions, the insurer of the safety of the thing bailed. When a person receives the goods of another to keep without recompense, and he acts in good faith, keeping them as his own he is not answerable for their loss or injury. As he derives no benefit from the B., he is responsible only for bad faith or gross negligence. This obligation, however, may be enlarged or decreased by a special acceptance, and a spontaneous offer on the part of the bailee increases the amount of care required of him. See BORROWING: LOAN: DEPOSITS.

A bank (national or otherwise) accustomed to keep securities, whether authorized by its charter to do so, or not, is liable for their loss by gross carelessness. So when a person receives an article and undertakes gratuitously some commission in respect to it, as to carry it from one place to another, he is only liable for its injury or loss through his gross negligence. It is compliance with the law if he keep or carry it as he does his own property. A borrower, on the other hand, who receives the entire benefit of the B., must use extraordinary diligence in taking care of the thing borrowed, and is responsible for even the slightest neglect. He must apply it only to the purpose for which it was borrowed; he cannot keep it beyond the time agreed; cannot permit any other person to use it; and cannot keep it as a pledge for demands otherwise arising against the bailor. The depositary or mandatory has the right of possession as against everybody but the true owner. The duties and liabilities of common carriers and innkeepers, under the contract implied by law, are regulated upon principles of public policy, and are usually considered by themselves.

BAILS, n. *bālz* [OF. *bailles*, a barricade, a palisade: L. *băcŭlus*, a stick]: the small sticks on the top of the wickets in the game of cricket.

BAILY, EDWARD HODGES, R.A.: 1788, March 10—1867, May 22; b. Bristol, Eng.: eminent sculptor. In 1807, he went to London, and entered Flaxman's studio. In 1809, he entered the school of the Royal Acad., and gained the silver and gold medals in rapid succession. He became an academician 1821. His earlier works were chiefly classical figures, careful in execution, simple and pure in conception; but it was not till his twenty-sixth year that his genius manifested itself in his celebrated *Eve at the Fountain*, a figure of exquisite grace and loveliness. His next works were, *Hercules casting Lycus into the Sea*, *Apollo Discharging his Arrows*, and *Maternal Love*. George IV. employed him, with other artists, to execute the sculpture in front of Buckingham Palace, the figures on the marble arch, and the *Triumph of Britannia*, and also the *bassi-relievi* that surround the throne-room. Besides these, B. executed a great num

ber of busts and statues of distinguished contemporaries, such as Telford the engineer, Earl Grey (14 ft. high), and Sir Astley Cooper. The statue of Nelson, in Trafalgar Square, is likewise his work. His *Eve listening to the Voice*, the *Sleeping Nymph*, *Girl preparing for the Bath*, and *The Graces Seated*, are among the finest efforts of his genius.

BAILY, Francis: 1774–1844; b. Newbury, Berks; d. London: eminent English astronomer. In the midst of active business as a London stockbroker, he laid the foundation of his scientific fame, and in later years rendered remarkable services to astronomy, chief among which were his share in the foundation of the Astronomical Soc., and in the improvement of the *Nautical Almanac*, his laborious repetition of Cavendish's pendulum experiments, and the production of the Astronomical Society's Star-catalogue. The latter, says his biographer, Sir J. Herschel, 'put the astronomical world in possession of a power, which may be said, without exaggeration, to have changed the face of sidereal astronomy.' In addition to several standard works on Life-annuities, etc. (1808–13), and an immense mass of contributions to the *Memoirs of the Astronomical Society*, he wrote a valuable *Life of Flamsteed* (1835).

BAILY'S BEADS, in Astron.: a phenomenon in connection with eclipses of the sun, fully described first by Francis Baily (q.v.). Just before the beginning and after the end of the obscuration of the sun's disc by the moon, the thin crescent-shaped unobscured portion of the sun seems usually to become suddenly discontinuous, and looks like a belt of bright points, varying in size and separated by dark spaces. The resulting appearance has been compared to a string of beads. The phenomenon is accounted for most probably as an effect of irradiation. To irradiation it is also due that, by default of the retina of the eye, bright objects seen on a dark ground seem larger than they really are.

BAIN, *bān*, Alexander: b. Aberdeen, Scot., 1818: writer on mental philosophy. He entered Marischal Coll. and Univ. 1836, and graduated 1840. From 1841 to '44, he assisted the prof. of moral philosophy in Marischal Coll., and 1844,5, taught the class of nat. philos. In the winter of 1845,6, he lectured on nat. philos. in the Andersonian Univ,, Glasgow. In 1847, he became assistant sec. to the Metropolitan Sanitary Committee, and was thence transferred to the same office in the General Board of Health, which office he resigned 1850. From 1857 to '62, and from 1864 to '69, he was examiner in logic and moral philos. in the Univ. of London. For several years he acted as examiner in mental philos. at the India civil service examinations. In 1860, he became prof. of logic in the Univ. of Aberdeen. He d. 1887, Jan. 2.

Mr. B. began as a writer 1840, contributing to the *Westminster Review*. He contributed also a number of treatises to the publications of W. and R. Chambers, especially in the educational department, among them an edition of the *Moral Philosophy of Paley, with Dissertations and Notes*

(1852). In 1855, he brought out *The Senses and the Intellect*, and 1859, *The Emotions and the Will*, completing a system of the human mind. In 1861, appeared *The Study of Character, including an Examination of Phrenology*. In 1863, he published an *English Grammar*, and 1866, a *Manual of English Composition and Rhetoric*. In 1868, appeared his *Mental and Moral Science, a Compendium of Psychology and Ethics;* 1870, *Logic, Deductive and Inductive;* 1872, *A Higher English Grammar* (with a *Companion*, 1874). In 1872, he acted with Prof. Robertson in editing Grote's treatise on *Aristotle;* and he edited Grote's minor works. In 1873, he published the *Relation of Mind and Body;* 1879, *Education as a Science;* 1881, *James Mill, a Biography*, and *John Stuart Mill, a Criticism*.

In 1881, he resigned his chair in Aberdeen, and was elected rector of the univ. B. is remarkable for the subtlety and minuteness of his analysis, and the clearness of his exposition. He belongs decidedly to the empirical or experimental school of philosophy, in opposition to the *a priori*, or transcendental. His chief work, *The Senses and the Intellect*, together with *The Emotions and the Will*, is a complete systematic exposition of the phenomena of the human mind. B.'s psychology is based on physiology, after the manner of Hartley's; but instead of considering the human organism as capable only of receiving impressions and of acting in response thereto, he finds in it a power of originating active impulses (see SPONTANEITY), and thus obviates many of the defects alleged by *a priori* philosophers to inhere in the system of sensationalism, as hitherto exhibited.

BAINBRIDGE, *bān'brĭj*, WILLIAM: naval officer: 1774, May 7—1833, July 28; b. Princeton, N. J. He began as a seaman at the age of 15, and in four years was commander of a merchantman. He showed intrepidity and determination in the instance of the impressment of one of his sailors by a British man-of-war; and in 1798 the reconstruction of the American navy gave him his opportunity. He obtained the appointment of lieut.-commander, and was placed in command of the schooner *Retaliation*, and afterward of the 18-gun brig *Norfolk*, and was made master-commander; and in 1800 he was promoted to capt., and given command of the frigate *George Washington*, with which he went to Algiers, his being the first war vessel to fly the American flag in those waters. He next commanded the *Essex* of the Mediterranean squadron 1801, and 1803 was appointed to command the *Philadelphia*, a 44-gun frigate attached to Commodore Preble's squadron, ordered to cruise against the Barbary pirates. The *Philadelphia* ran aground off Tripoli, while chasing a corsair, and was surrendered to a swarm of Tripolitans who attacked her in boats: the following year she was destroyed by Lieut. Stephen Decatur. B. and his 315 men were held prisoners for 19 months, suffering extreme privations and in danger; they were released at the close of the war against Tripoli, 1805, June. B. returned to the United States, and a court of inquiry being held in his case, he was acquitted; but though offered the command of the navy yard at New York, he declined it because of pecu

niary embarrassment due to his long imprisonment, and re-entered the merchant service, in which he remained except for a brief period until 1811, when he was made commodore and placed in command of a squadron, including the frigate *Essex*, the sloop-of-war *Hornet*, with the frigate *Constitution* (44 guns) which he personally commanded, and with which he defeated and captured the British frigate *Java* (49 guns) 1812, Dec. 26, off the coast of Brazil. The *Constitution* lost 9 killed, 25 wounded; the *Java* lost 60 killed, 101 wounded. B. was wounded twice during the engagement, and on his return to the United States was enthusiastically received, and was voted a gold medal by congress. In 1815 the United States declared war against Algiers, and B. was placed in command of a large squadron and sent to the Mediterranean, when a peace was soon arranged. B. established at the Boston yard the first naval school in the country, 1817; and commanded at several stations until his death, in Philadelphia.

BAINES, *bānz*, EDWARD: editor: 1774–1848: b. Walton le-Dale, Lancashire, England. After a grammar-school education, he was apprenticed to a printer in Preston and established himself in Leeds, where, 1801, with the assistance of friends, he bought the *Leeds Mercury*, which he made the organ in the n. of England of liberal and reformatory but independent politics. His course raised the provincial press to new character and power. He was elected to parliament from Leeds 1834, 35, and 37, and resigned 1841, from ill health. He published *History of the Wars of Napoleon; History of the County Palatine and Duchy of Lancaster; The Reign of George III.*, etc.

BAINI, *bâ-ē'nē*, GIUSEPPE: 1775, Oct. 21—1844; b. Rome: one of the most distinguished scientific musicians of modern times. In 1795, he became a singer in the Papal Chapel. The severe gravity and profound science of his compositions contrasted strongly with the careless style and shallow dilettantism of the modern Italian masters. Even more valuable than his compositions are his historical researches. His principal work is his life of Palestrina, with criticism (1828). B. was appointed director of the papal concerts, 1804, and general director of the choir, 1814.

BAIN-MARIE, n. *bān-măr-ī'ē* or *-mār'ē* [*bain*, a corruption of *balnĕŭm*, a bath, and *Marie* or *Mary*, a Jewess, who discovered and employed the method]: a hot sandbath; a hot-water bath in which cooked preparations may be kept hot, without injury to their qualities, until required for the table.

BAIRAKTAR, *bī-rāk-târ'*, more correctly, BAIRAK-DAR, signifying Standard-bearer: title of the energetic Grand Vizier Mustapha: 1755–1808, Nov. He was the son of poor parents; entered the military service at an early age, and soon distinguished himself by his valor. When he was Pacha of Rustchuk, 1806, he withstood the Russian army, which had advanced into Moldavia and Wallachia, and had taken Bucharest. After the revolt of the janizaries, 1807, by which Selim III. (q.v.) was deposed from the throne, in favor of Mustapha IV., B. at first concealed his attachment

to the deposed monarch, and marched with his troops apparently against the revolted Servians; but as soon as he reached Adrianople, he compelled the grand vizier to return with him to Constantinople, in order to restore the throne to Sultan Selim. On their return, they found this prince murdered, and his dead body lying in the first court of the seraglio. Filled with rage at this sight, B. caused all those to be put to death who had had share in the murder. He deposed Mustapha IV.; proclaimed the brother of this prince, Mahmoud II., sultan, 1808, July 28; and was appointed grand vizier. In the exercise of this office, he deposed the grand mufti, the leader of the janizaries, and all the ulemas who had taken part in the last revolution; while he was careful to secure the tranquillity of the capital, and strengthened the regular army. His chief object was the annihilation of the janizaries; but, like the unfortunate Selim, he fell a victim to these fierce bands of soldiery, who resisted everything like military discipline. Favored by the fanatical people, the janizaries rebelled, and, with the support of the fleet, attacked the seraglio, 1808, Nov. 15, demanding the restoration of Mustapha IV. B. defended himself bravely; but when he saw that the flames threatened to destroy the palace, and that he was in danger of falling alive into his enemies' hands, he strangled Mustapha, threw his head to the besiegers, and then blew up with gunpowder the palace and himself.

BAIRAM, n. *bī'răm* [Turk]: a festival among the Turks, celebrated for three days immediately after the fast of Ramazan. See BEIRAM.

BAIRD, *bard* or *bārd*, ABSOLAM: born 1824, Aug. 20, Washington, Penn.; d. near Relay, Md., 1905, June 14: soldier. He graduated at West Point 1849, was promoted first lieut. 1853, and till 1859 was asst. prof. of mathematics at West Point. At the commencement of the civil war, he commanded a battery; was adjt.gen. of a div. in the Manassas campaign; chief of staff of 4th army corps in the Peninsular campaign; commanded a brigade in the Army of the Ohio 1862, and a div. under Rosecrans in Tennessee. He was brevetted maj.gen. of vols. for services at Atlanta, and 1865 maj. gen. U. S. A. He was staff inspector-general from 1885 to 1888, when he was retired.

BAIRD, CHARLES WASHINGTON, D.D.: 1828, Aug. 28 —1887, Feb. 11; b. Princeton, N. J.; son of Robert B., D.D.: clergyman and author. He graduated at the Univ. of the City of N. Y. 1848, and at Union Theol. Seminary 1852; was Amer. chaplain at Rome 1853, and 1854–61 was pastor of a Dutch Ref. Chh, in Brooklyn; from 1861 till his death of the Presb. Chh. at Rye, N. Y. Many of his writings have been published; among them: *A Chapter of Liturgies* (1856); *A Book of Public Prayer* (1857); *Chronicles of a Border Town;* a *History of Rye, N. Y.* (1871); *History of Bedford Church* (1882); *History of the Huguenot Emigration to America* (1885).

BAIRD, Sir David, Bart.: general in the British army, 1757, Dec. 6—1829, Aug. 18; b. Newbyth, Scot. He entered the service, 1772 and 1778, sailed to India as capt. in the 73d, a Highland regiment. Its name was soon changed to the 71st Highland Light Infantry, and it became one of the most famous regiments in the service. He was soon in a sanguinary war. The English had excited the hostility of Hyder Ali by a gross breach of faith; and 1780, July, the latter burst into the Carnatic at the head of 100,000 men, disciplined and commanded by French officers. Sep. 10, a portion of the English army fell into an ambuscade at Peramboucum, and was cut to pieces. Among the few who remained alive to be taken prisoners was B., whose heroism had startled the French officers who were opposed to him. He was thrown into a dungeon at Seringapatam, where he endured a galling captivity of four years. Released, 1784, July, he became lieut.col. of his regiment, 1791; in 1795, received a colonelcy; in 1798, was raised to maj.gen.; and in 1799 memorably signalized himself at the victorious assault of Seringapatam. He led the storming-party, having obtained that perilous honor at his own urgent request, Col. Wellesley (afterwards Duke of Wellington) commanding the reserve. In requital of his brilliant services, he was presented by the army, through the commander-in-chief, General Harris, with the state-sword of Tippoo Saib, and received the acknowledgments of the home government. On his return to India, considering that undue preference had long been given to Wellesley, and that his own merits were constantly overlooked, B. applied for leave of absence; sailed for Europe 1803; was received at court with great distinction, knighted 1804, June, and made a K.C.B. in Aug. In 1805, he commanded an expedition against the Dutch settlements at the Cape of Good Hope; in 1807, he commanded a division at the siege of Copenhagen; in 1808, was sent to Spain with an army of 10,000 men, to assist Sir John Moore. He distinguished himself in the battle of Corunna, 1809, Jan. 16. Moore having been killed in the action, Sir David succeeded to the chief command, and had the honor of communicating intelligence of the victory to government. On this occasion, he received, for the fourth time, the thanks of parliament, and was created a baronet, afterwards retiring from active service.

BAIRD, Henry Martyn, educator: b. Philadelphia, 1832, Jan. 17; d. Yonkers, N. Y., 1906, Nov. 11. He graduated at New York Univ. 1850; studied in Greece, and later pursued a course of theol. in Union and Princeton seminaries; was a tutor in Princeton College 1855–59; and in 1859 became prof. of Greek in New York Univ. He is the author of *The Huguenots and Henry of Navarre; The Huguenots and the Revocation of the Edict of Nantes; Theodore Beza, The Counsellor of the French Reformation, Narrative of a Residence and Travels in*

Modern Greece (1856); *Life of Robert Baird, D.D.* (1865); and *History of the Rise of the Huguenots* (1879).

BAIRD, SPENCER FULLERTON, LL.D.: 1823, Feb. 3—1887, Aug. 17; b. Reading, Penn.: naturalist. He graduated at Dickinson Coll. 1840; then began the study of nat. science, and became prof. of that dept. in Dickinson Coll. 1845. He became asst. to Prof. Henry at the Smithsonian Inst., 1850, and after Prof. Henry's death became the secretary. He was appointed U. S. commissioner of fish and fisheries 1871, and thereafter devoted much of his time to the duties of that office, while continuing to act as sec. of the Smithsonian Inst. His principal published works are: *Birds of N. America* (1860); *Mammals of N. America* (1859); *Review of Amer. Birds in the Smithsonian Inst.* (1864); *Hist. of N. Amer. Birds* (1874–84). From 1872–78, he edited for Harper & Bros. the *Annual Record of Science and Industry.*

BAIREUTH, or BAYREUTH, *bī'royt:* cap. of the province of Upper Franconia, Bavaria; formerly cap. of the principality of B.; beautifully situated on the Red Mayn, about 126 m. due n. from Munich. Its streets are broad and well paved, interspersed with groves, promenades, fine gardens, and public fountains. Its principal buildings are the old palace, the new palace, containing a gallery of paintings; the mint, opera-house, riding-school, infirmary, and town-hall. A magnificent new opera-house for the performance of Wagner's music, finished 1875, was opened 1876 with a grand representation lasting several days, of a new work by that composer. B.'s chief articles of industry are leather, cottons, woolens, linen, tobacco, parchment, and porcelain. In B. is a monument to Jean Paul Richter, who died here, 1825. Pop. (1900) 29,387.

BAIRN, n. *bärn* [AS. *bearn:* Meso-Goth. and Icel. *barn,* a child]: in *Scot.* and *prov. Eng.*, a child.

BAIT, n. *bāt* [AS. *batan,* to bait a hook: Icel. *beit:* Sw. *bete,* pasture, grazing: Sw. *beta,* food]: any substance put on a hook to entice fish to swallow it; anything to allude or entice; refreshment taken on a journey: V. to allure by food; to give food or drink to a beast on a journey; to refresh with food on a journey. BAIT'ING, imp. BAITED, pp. *bāt'ĕd.* TO BAIT A HORSE, to give a horse food and drink, and rest, while on a journey.

BAIT, v. *bāt* [AS. *betan,* to kindle a fire by blowing it up: Icel. *beita,* to set dogs on one, to harness oxen or horses: OF. *abetter,* to incite]: to cause to be worried by dogs; to provoke and harass with the help of others; to attack with violence, as with dogs. BAIT'ING, imp. BAIT'ED, pp. TO BAIT A BEAR OR A BULL, to set dogs on to bite and worry it.

BAITOOL, or BEITOOL, *bī-tōl':* fortified town of British India, in the presidency of Bengal; 50 m. n.e. from Ellichpoor.

BAIZE, n. *bāz* [Dan. *bai;* OF. *baye;* Dut. *baey,* baize:

probably *Baiae*, where first made]: a coarse woolen stuff, of an open texture with a long nap.

BAJA, *bâ'yâ:* market-town of Hungary, in the circle of Bacs, on the Danube; celebrated for its annual swine-fair. Grain and wine, in large quantities, are produced in its neighborhood. Pop. (1890) 19,740.

BA'JAN: see BEJAN.

BAJARDOUR, n. *băj'ar-dôr* [L. *bajulator*]: a bearer of any weight or burden.

BAJAZET, *băj-a-zĕt'*, or BAJASID, *bâ-yâ-zĕd':* Sultan of the Turks: 1347-1403. In 1389, he succeeded his father, Murad I., who fell in battle with the Servians near Kosovo. Immediately on ascending the throne, he followed the fashion of eastern kings, by strangling his younger brother Yakub, lest he should dispute the succession. In three years he conquered Bulgaria, a part of Servia, Macedonia, and Thessaly; he also subdued most of the states of Asia Minor. From the rapidity of his conquests he received the name Ilderim—that is, Lightning. He even blockaded Constantinople itself for ten years, thinking to subdue it by famine. To rescue this city, King Sigismund of Hungary (afterwards Emperor of Germany) with a large army, in which there were 2,000 French nobles under the command of the Duke of Nivey, attacked the city of Nikopolis, Bulgaria, on the Danube. B. hastened to meet him, and gained a decisive victory over the allied Hungarians, Poles, and French, 1396, Sep. 28; and the greater part of the French, through whose impetuosity the battle was lost, were taken prisoners, and nearly all put to death. B. would now have entirely destroyed the Greek empire, if he had not been prevented by Timur (q.v.), who attacked his possessions in Asia Minor, and completely defeated him 1401, June 16, near Angora, cap. of what was anciently called Galatia, on the very spot where Pompey had formerly overthrown Mithridates. B. himself fell into the hands of the conqueror, who treated him with great generosity. The story that he was carried about imprisoned in a cage is without historical foundation. B. died in the camp of Timur, and was succeeded in the government by his son Soliman I. B. made some administrative improvements, and built many mosques.

BAJAZET II., Ottoman Sultan: 1447-1513: son of the Sultan Mohammed II., the conqueror of Constantinople; began to reign 1481. His reign of 32 years was a succession of wars against Hungary, Poland, Venice, Egypt, and Persia. The last years of his reign were much disturbed by disputes between his sons about the succession to the throne. Influenced by the preference shown by the janizaries for his younger son Selim, B. abdicated in his favor, but died before he could reach the place of his voluntary exile. B was liberal, and fond of pomp and splendor. Many of the most beautiful mosques in Constantinople and Adrianople were built and magnificently decorated by him.

BAJIMONT'S ROLL, *băj'ĭ-mont:* a valuation, according to which the ecclesiastical benefices of Scotland were taxed,

from the end of the 13th c. to the Reformation; named from an Italian churchman, Benemund, or Baiamund de Vicci, sent from Rome by the pope about 1276, to collect the tithe, of all the church livings in Scotland, for an expedition to the Holy Land. No complete copy of B. R., in its original shape is now known to exist. Of the *Antiqua Taxatio*, which was superseded by B. R., there are good copies in the handwriting of the 13th c., as far as concerns the benefices in the four dioceses of St. Andrews, Brechin, Aberdeen, and Moray.

BAJMAK, or BAJMOK, *bŏ'ē-mŏk:* large village of the Austrian empire, Hungary, province of Bacs; 16 m. s.w. of Theresienstadt. Pop. (1890) 7,151.

BAJOCCO, or BAIOCCO, *bă-yŏk'ko* (plu. BAJOCCHI): formerly a copper coin in the Papal States, value about one cent. It was 1-100th of the scudo, which was equal to about $1.03. In the island of Sicily, the Neapolitan *grano*, the 1-100th part of the ducato (= $0.80), was also called a bajocco.

BAJUREE, n. *băj'ū-rē*, BAJREE, *băj'rē*, BAJRA, *băj'ra*, or BAJURY, *băj'ū-rĭ* [Mahratta, *bajuree*]: name of a grain extensively cultivated in India.

BAJUS, *bā'yŭs*, MICHAEL (properly, De Bay): 1513–89, Dec. 16; b. Melun, France: one of the most distinguished theologians of the Rom. Cath. Church in the 16th c. He studied at Louvain, and became prof. of theology there, 1550. He was at the Council of Trent in 1563 and 1564. He was the founder of a system of theology, based directly on the Bible and the writings of the Fathers, and setting aside the scholastic method. He had studied much the writings of St. Augustine, and confined himself within the circle of ideas held by that Father, whose doctrines of the entire inability of the human will to do good, and the absence of merit in all good works, B. defended against the Jesuits. The assertions that the human will, as long as it is left to its own freedom, can do nothing but sin, and that even the mother of our Lord was not free from original and actual sin, with other such doctrines, drew on him the accusation of heresy, and 76 of his propositions were condemned by a papal bull. B. submitted, but did not give up his doctrines, and still was subjected to persecution. He earned the reputation of great learning, pure manners, and singular modesty. He may be regarded as the predecessor of the Jansenists, who inherited his Augustinian views, at that time termed Bajanism. His writings, mostly polemical, were pub. by Gerberon (2 vols., Cologne, 1696).

BAJZA, *bī'zŏh*, JOSEPH: Hungarian poet and prose-writer; 1804, Jan. 31—1858, March 4; b. at Szücsi, in Hertes. His Poems (2 vols., Pesth, 1835), earned him a place among the best Hungarian lyric poets. In the *Kritische Blätter*, 1831–36, the *Athenæum*, and the *Figyelmezö* (Observer), 1837–43, he exercised a beneficial influence on the rising literature of Hungary by his severe criticism. He materially aided the Hungarian stage, then in its infancy, by translating a collection of Foreign Dramas (1830), and published an

Historical Library (from the German) 6 vols., a Modern Plutarch, and a Universal History, a rather unskilful compilation.

BAKACS, *bŏh-kŏtch'*, THOMAS: Hungarian statesman; b. abt. the middle of the 15th c., d. 1521; son of a peasant; held several bishoprics in succession, became chancellor of the kingdom, and finally abp. and cardinal. He preached a crusade against the Turks; which ended in a bloody civil war. At his death he left enormous wealth to his relations.

BAKARGANJ: see BACKERGUNGE.

BAKE, v. *bāk* [Icel. *baka*, to warm: Ger. *bähen*, to foment; *backen*, to bake; Dut. *backern*, to warm one's-self; *bakken*, to bake]: to harden by fire or the heat of the sun; to dress food in an oven or by fire. BAK'ING, imp.: N. the quantity baked at one time. BAKED, pp. *bākt*, or BAKEN, pp. *bāk'ĕn*. BAK'ER, n. one whose employment is to bake; a small portable tin oven. BAKERY, n. *bā-kėr-ĭ*, the place where bread is baked; also BAKE'HOUSE. BAKE-MEAT or BAKED-MEAT, n. meat baked in an oven; a meat-pie. BAK'ING-POW'DER, n. a powder consisting of tartaric acid, bicarbonate of soda, and rice or potato flour; a substitute for yeast. BAKER'S DOZEN, n. thirteen; the number of loaves sometimes formerly given by bakers as a dozen, in order to avoid the penalty for short weight.

BAKE, *bâ'kė*, JOHN: 1787–1864, Mar. 26; b. Leyden; distinguished classical scholar; became prof. in the univ. there, 1815. He made substantial contributions to the criticism of Cicero and the Attic orators in *Bibliotheca Critica Nova* (5 vols. Leyden, 1825–31), and *Scholica Hypomnemata* (5 vols. 1837–62). His edition of the *De Legibus* of Cicero has high merits; of less value is that of the *De Oratore*.

BAK'ER, *bā'kėr*, SIR BENJAMIN, English engineer: b. near Bath, 1840; d. Pangbourne, Berkshire, 1907, May 19. In 1877 he superintended the removal of Cleopatra's Needle from Egypt to London, designing a ship for that purpose. In conjunction with Sir John Fowler he drew the plans for the great bridge over the Firth of Forth. He wrote *Long Span Iron Bridges; Suspension Versus Cantilever Bridges; The Strength of Beams;* and *Transportation and Re-erection of Cleopatra's Needle.*

BAK'ER, BENJAMIN W., American educator: b. Coles County, Ill., 1841, Nov. 25. He served in the Union army through the Civil War; became a Methodist Episcopal clergyman in 1874; and was financial secretary of the Illinois Wesleyan University in 1883–93; president of Chaddock College in 1893–8; and subsequently became president of the Missouri Wesleyan College in Cameron.

BAKER, EDWARD DICKENSON: soldier; b. London, England, 1811, Feb. 24; d. 1861, Oct. 21. He emigrated to the United States at the age of 5 years. Being left an orphan, he worked as a weaver, studying in his spare time. He studied law and was admitted to the bar, settled in

Ill., gained repute as an orator, and became a whig member of the legislature 1837, and of congress 1844. On the outbreak of the war with Mexico, he entered the army, and distinguished himself at Cerro Gordo, where he commanded a brigade. He was again a member of congress 1849–51; and removed 1851 from Galena, Ill., to San Francisco. Thence he removed to Or.; was a U. S. senator from that state; and 1861, after advocating the Union in passionate orations, he entered the civil war as a col., and commanded a brigade at the battle of Ball's Bluff, Va., where he was killed.

BAK'ER, George Augustus, American painter: b. New York, 1821; d. 1880, April 2. He studied at the National Academy of Design in New York, and in Europe, and was elected to the National Academy in 1851. He was especially celebrated as a portrait painter, and reproduced flesh-tints very accurately. His principal works, aside from his portraits, are *Love at First Sight; Wild Flowers; Faith;* and *The May Queen.*

BAK'ER, George Augustus, American writer of verse and stories: b. New York, 1849, Aug. He wrote *Point Lace and Diamonds*, light society verse (New York 1875); *Bad Habits of Good Society* (1876); *Mrs. Hephæstus and Other Stories* (1887); and several comedies.

BAK'ER, Harriette Newell (Woods) (pseudonyms Madeline Leslie and Aunt Hatty), American writer of juvenile stories: b. 1815; d. 1893. A very voluminous writer, several of her works have been translated into French and German. She wrote *Tim, the Scissors-Grinder* (1861, sequel in 1862), her most popular work; *Up the Ladder* (1862); *The Two Homes* (1862); *The Organ-Grinder* (1863); *White and Black Lies* (1864); *Worth and Wealth* (1864); *Tim's Sister* (1864); *Wheel of Fortune* (1865); *Courtesies of Wedded Life* (1869); *Paul Barton* (1869); *Fashion and Folly* (1869); *Lost but Found* (1869); *Ingleside* (1886); *This and That* (1887); etc. She was a daughter of Leonard Woods, the theologian, and wife of Rev. Abijah R. Baker.

BAK'ER, Henry, English naturalist: b. 1698, May 8; d. 1774, Nov. 25. In 1740 he was chosen a Fellow of the Royal and Antiquarian societies, and in 1744 obtained the Copley medal for his microscopical discoveries on crystallization. He contributed many papers to the *Philosophical Transactions*; was an active member of the Society for the Encouragement of Arts. He wrote *The Microscope Made Easy; Employment for the Microscope;* many scientific papers, and several poetical works.

BAK'ER, Ira Osborn, American educator: b. Linton, Ind., 1853, Sept. 23. He became professor of civil engineering in the University of Illinois in 1880, and has published *Engineers' Surveying Instruments; Treatise on Masonry Construction;* and *Brick Pavements.*

BAK'ER, James Hutchins, American educator: b. Harmony, Me., 1848, Oct. 13. He was principal of the

Denver High School in 1875–91; and in the last year became president of the National Council of Education, and also of the University of Colorado. He has published numerous lectures and monographs, and a work on *Elementary Psychology*.

BAK'ER, John Gilbert: English botanist: b. Guisborough, Yorkshire, 1834, Jan. 13, and was appointed assistant curator at the herbarium at Kew in 1866. He was for many years lecturer on botany to the London Hospital, and in 1882 received a like appointment from the Apothecaries' Company; he is also a member of the Royal and Linnæan Societies. His voluminous writings include works on the flora of districts so diverse as the north of England, Madagascar, and Brazil; and popular monographs and scientific catalogues of high value.

BAKER, Lafayette C.: chief U. S. secret service: b. Stafford, Genesee co., N. Y., 1826, Oct. 13; d. 1868, July 2: he settled in Mich., 1839, and was active in pioneer work for some years. Having an adventurous disposition, he travelled over the country 1848–61, working as a mechanic in New York, Philadelphia, and San Francisco, and was an active member of the vigilance committee in the latter city 1856. In 1861 he went to New York, and was sent by Gen. Scott on a confidential mission to Richmond, Va., where he was arrested and imprisoned as a spy. He succeeded in returning north, and was made chief of the secret service bureau with almost unlimited authority, in which office his work was of great value. The bureau being transferred to the war dept., B. was commissioned col., and later brig.gen. He published *History of the United States Secret Service* (1868).

BAK'ER, Marcus: American cartographer: b. Kalamazoo, Mich., 1849, Sept. 23; d. 1903. He became connected with the United States Coast and Geodetic Survey in 1873, and with the United States Geological Survey in 1886; and in 1900 was secretary of the United States Board on Geographic Names. He was cartographer to the Venezuela boundary commission, and after spending many years surveying and exploring in Alaska and along the Pacific coast, prepared, with William H. Dall, the *Alaska Coast Pilot*.

BAK'ER, Moses Nelson: American civil engineer: b. Enosburg, Vt., 1864, Jan. 26. He was editor for several years of the *Manual of American Waterworks;* and in 1900 was associate editor of *Engineering News*. He has published *Sewage Purification in America; Sewerage and Sewage Purification*, etc.

BAKER, Mount: active volcano in the state of Washington; in the Cascade Range, a continuation of the Rocky Mountains. It is near to the n. boundary of the state. It is in eruption from time to time, and was very active 1880. Its height is given at over 10,500 feet.

BAKER, Sir RICHARD; abt. 1568–1645; b. Kent (or Oxfordshire): author of the *Chronicle of the Kings of England*, a book long esteemed and quoted on all matters of English history by the country gentry. Addison makes his model squire, Sir Roger de Coverley, refer to it frequently. Yet it had many errors, and is now nearly forgotten. B. was educated at Oxford and in 1603 was made a knight. About 1620, he married and settled in Oxfordshire, of which county he was made high sheriff; but he was soon afterwards thrown into the Fleet Prison for debt which his wife's family had contracted, but for which he had become responsible. Here he wrote his *Chronicle*, pub. 1641, besides several pious works of less note. He died in prison, in poverty.

BAKER, Sir SAMUEL WHITE, K.C.B.: African traveller; b. 1821; son of Samuel B., of Thorngrove, Worcestershire. B. was educated as an engineer, and at an early age went to Ceylon, where, led by the love of field-sports, he explored the recesses of the island. In 1854, he published a work entitled *The Rifle and the Hound in Ceylon;* 1855, *Eight Years' Wanderings in Ceylon.* B. afterwards superintended the construction of the railway which connects the Danube across the Dobrudscha with the Black Sea. In 1860, B. married Florence, dau. of F. von Sass, a young Hungarian lady of great talent and enterprise; and in company with her, he undertook a journey of exploration on the Upper Nile. They set out from Cairo, 1861, Apr.; and B. gave attention first to the Atbara and Blue Nile, the chief affluents of the Nile, which descend from the highlands of Abyssinia. In June, he arrived at the course of the Atbara, at that season dry, or marked by only a few stagnant pools. On the 23d, when the Abyssinian rainy season had set in, a noise like distant thunder was heard, and in a few seconds the river-bed had been converted into a torrent 20 ft. deep. Eight days later, it had become a great river, charged with mud, washed from the hills, which it carried down to the Nile, to cause the inundations and mud deposits of Egypt. B. reached Khartoum, 1862, June, and there he had an opportunity of contrasting the Blue and While Nile. He found the former, like the Atbara, to be a mountain torrent, rising and falling with the Abyssinian rains, but always free from deposits of mud. The White Nile did not thus rise and fall, and its water, never pure, had a disagreeable taste of vegetation, showing that it proceeded from lakes and marshes. When B., with his wife, quitted Khartoum to ascend the White Nile, he had in his pay an escort of 90 persons, 29 camels and asses, and three large boats. After passing through a wonderful region of forests and marshes, the travellers reached Gondokoro, a rendezvous of the traders of the interior. They had been there only a fortnight, when they were joined by Speke and Grant, who had penetrated into those regions from the s. Speke and Grant told B. of the Victoria N'yanza, which they had discovered and explored, and that the natives had described to them another great lake, named Luta Nzige, which they had been unable to visit. B. set out to reach it; and after a series of adventures, he and his wife arrived, 1864, March 14, on

the top of lofty cliffs, from which they beheld the vast inland sea, to which B. gave the name Albert N'yanza. In 1869, an expedition for the suppression of slavery in the interior of Africa was organized by the pasha of Egypt, under B.'s command. A large territory was brought under Egyptian authority. B. was succeeded, 1873, by Gordon Pasha. For the withdrawal by Egypt from these southern regions, see EGYPT: GORDON. B. was knighted 1866, and has received many foreign distinctions. In 1866, he published *The Algert N'yanza;* 1871, *The Nile Tributaries of Abyssinia;* 1874, *Ismailia,* an account of his expedition of 1869–73; and *Cyprus as I saw it in* 1879. D. 1893.

BAKER, THOMAS: antiquary: 1656–1740: educated at Cambridge. He was a non-juror, and consequently resigned his rectorship of Long-Newton, 1690; and he lost his fellowship at the accession of George I. He continued, however, to live in his college, St. John's, Cambridge. He wrote *Reflections on Learning,* and made valuable MS. collections on the history of the univ., abt. 40 vols. folio.

BAKER, WILLIAM BLISS: artist: 1859–1886, Nov. 20; b. New York. He entered as an art student at the National Acad. of Design 1876, and remained 4 years, first exhibiting 1879. In 1884 he exhibited his *Woodland Brook,* for which he received the third Hallgarten prize of $100. Others of his works are: *In the Old Pasture; Pleasant Day at Lake George* (1883); *October Morning* (1884); *Solitude* (1885); and *Under the Apple Trees* (1886)—all exhibited at the National Academy.

BAKER, WILLIAM MUMFORD: Presbyterian clergyman: 1825–1883, Aug. 20; b. Washington, D. C. He graduated at Princeton Coll. 1846, studied for the ministry, and settled in Texas. He had charge of Presb. churches in Austin and Galveston 1850–65, when he accepted a call from Zanesville, O.; thence went to Newburyport, Mass.; and 1874 took charge of a Presb. church in South Boston, Mass. While in Texas, B. wrote a work entitled *Inside: A Chronicle of Secession* (published 1865 anonymously), which made a marked impression by its vivid delineation of scenes and conditions under Confederate rule; it appeared originally as a serial in *Harper's Weekly.* Notwithstanding the difficulties of his position in the capital of Texas during the civil war, B. succeeded in holding his church in connection with the Northern Presb. Assembly. Among his works are: *The Virginians in Texas; The New Timothy; His Majesty Myself; Colonel Dunwooddie; Blessed Saint Certainty; Thirlmore;* besides serials in the *Atlantic Monthly, Harper's Monthly,* and other periodicals—including *Mose Evans, Carter Quarterman,* and *A Year Worth Living.* His books have had extensive popularity, owing partly to peculiarly original style and plot, and partly to the fidelity of his portrayal of character.

BA'KER CITY: city and county-seat of Baker co., Ore., on a fork of the Powder river and on the line of the Oregon Railroad and Navigation Company; 300 m.

e. of Salem, 357 m. e. by s. of Portland; elevation 3,300 ft. It is the principal shipping and business point of the co., and the centre of the mining regions of Grant, Malheur, Union, and Wallowa cos., which lie about it for a radius of 50 m.: also the centre of a vast agricultural and timber region. The leading industries are mining, lumbering, stock-raising and agriculture, the principal products, being gold, silver, copper, live-stock, wheat, oats, barley, deer, elk, sheep, and fowl; the manufacturing establishments include iron works, saw and planing mills, brickyards, brewery, etc.; and the principal shipments are lumber, wool, hides, grain, live-stock and the mine products. The city contains public and high schools and parish schools, churches, banks, a Masonic Temple, opera house, natatorium, and other public buildings. It was settled in 1860 and incorporated in 1872, the government being vested in a mayor, biennially elected, and a city council. The city owns and operates the water-works. Pop. (1910) 6,742.

BA'KER PASHA: 1825–1887, Nov. 18; b. Gloucestershire, Eng.: soldier. He served in the British army through the Kaffir war 1852–3, and in the Crimea 1855. At the age of 28 years he was col. of hussars. He travelled extensively in Persia, Afghanistan, etc., 1873, and on his return published a book, *Clouds in the East*, which had a great success. He was convicted 1874 of criminal assault on a young woman in a railway carriage, and, after undergoing a term of imprisonment, left England and entered the service of the sultan of Turkey, first as maj.gen. of gendarmie; later, he commanded a division in the Balkans. He distinguished himself 1882 in the war in the Soudan with Osman Digna, lieut. of the Mahdi. B. P. was author also of *The British Cavalry* (1858), and *Our National Defences* (1860). He contributed to magazines articles on army reform and the employment of cavalry.

BAKHTEGAN, *bâk-tā-gân:* salt-lake of Persia, province of Farsistan, from which remarkably fine salt is obtained. Its size is variously stated—some writers making it 60 m. in length, with an average breadth of 8 m.; others only 70 m. in circumference.

BAKING: the mode of cooking food in an air-tight, or at least close, chamber or oven. The term is applied also in the manufacture of Bricks (q. v.), Porcelain (q. v.), etc. For the B. of bread, see BREAD.

BAKING POWDER: a chemical preparation used in the place of yeast to give lightness to bread and other similar articles of diet. Yeast induces a kind of fermentation, accompanied by the generation of bubbles of the gas known to chemists as carbon dioxid; and it is the development of these bubbles within the dough that causes it to swell (or 'rise') and become light. When baking powder is used in the place of yeast, the action is similar, except that the gas is generated by direct chemical action,

instead of by fermentation. The best baking powders contain bicarbonate of soda or bicarbonate of ammonia as their alkaline constituent, intimately mixed with tartaric or phosphoric acid, or an acid tartrate or phosphate. So long as the powder is kept dry, its acid and alkaline constituents do not combine with each other; but when moistened, combination takes place, and carbon dioxid, is generated, just as in the case of yeast. Owing to the cost of tartrates and phosphates, alum is not infrequently used as the acid constituent in the cheaper powders; but health authorities almost universally condemn this substitution.

BAKONY WALD, *bâ-kō'nē vâlt* (Forest of Bakony): densely wooded mountain-range of Hungary, s. of the Danube, dividing the great and little Hungarian plains. Immense herds of swine are annually driven hither to feed upon the mast of the forest. The keepers of these swine furnished those notorious robbers who play so important a part in the ballads of the Hungarian people, and in the imagination of travellers. The saintly King Stephen founded a cloister in the forest, 1030. Only in recent times has this dangerous territory been thoroughly explored. The hills have an average height of 2,000 ft., with quarries of valuable marble, material for considerable export trade.

BAKSHISH, *băk'shēsh:* in the Persian language a *present;* but in the East, in modern times, it has acquired the special signification of gratuity (Ger. *Trinkgeld*), which, however, the orientals do not quietly wait to receive, but demand loudly, and even insolently. Every traveller in Turkey, Egypt, Asia Minor, or Syria, if he receive the smallest service from any one, is immediately reminded by the cry of 'Bakshish, Bakshish,' to pay for the courtesy by a gift of money. Even when the ambassadors to the Supreme Porte obtain an audience from the sultan, or from any of the high dignitaries, they are obliged, by the prompt gift of a B., to avoid a peremptory demand for it on the part of the door-keepers and other servants. By degrees, the B. has been fixed by custom at certain sums.

BAKTSHI-SERAI, *bâk'chē-sa-rī':* ('City of the Gardens'): residence of the ancient princes or khans of the Crimea, in a deep limestone valley, not far from the present cap. Simferopol. The city is kept in excellent repair—a striking contrast to the modern towns of the Crimea. It is one of the most singular in Europe. The palace of the ancient kbans has been completely restored in the oriental style by the Russian govt. It consists of a great labyrinth of buildings, courts, and gardens, and is situated about the middle of the town, which it divides into two parts. Pop. 15,644, almost exclusively remnants of the old Tatar inhabitants.

BAKU, *bâ-kô':* important seaport of Russian Transcaucasia, on the Apsheron peninsula in the Caspian Sea. Since 1883 it is connected by rail with Tiflis, and so with

Poti and Batoum on the Black Sea. The whole soil around B. is impregnated with petroleum, which forms an important branch of its industry. Some of the fountains ignite spontaneously, and this natural phenomenon has caused B. to be esteemed as a holy city by the Parsees or fire-worshippers, many of whom resort to it from every long distances. B., besides its trade in naphtha, exports cotton, silk, opium, saffron, and salt. The Arabian, Masudi, is the first who mentions B., about 943, and he gives an account of a great volcanic mountain in its vicinity, now extinct. B. was ceded by the Persians to the Russians, 1806. Recently there has been a marvellous development of the petroleum trade (see Marvin, *B. the Petrolia of Europe*, 1884). The refuse is used as a substitute for coal in the steamers on the Caspian Sea. The harbor, strongly fortified, is one of the chief stations of the Russian navy in the Caspian, and is also of great importance as a centre of trade. Much shipbuilding is done. Pop. 115,000.

B. is cap. of a govt. of Russian Transcaucasia, whose pop. is nearly 800,000. See Marvin, *The Region of Eternal Fire* (1883); Louis, *The Baku Petroleum District* (1898).

BALAAM, *bā'lam*, or *bā'la-am:* a prophet prominent in the early history of the Israelites. He is mentioned first in Numbers xxii. 5, where Balak, King of the Moabites, alarmed at the irruption of the chosen people into his territories, is represented as sending messengers to Pethor, in Mesopotamia, the dwelling-place of the seer, to beseech him to come and curse the invaders. The narrative is marked by two peculiarities, which have excited much speculation and controversy. The first is, the admittedly prophetical character of B., notwithstanding that he was a Gentile; the second is, the curious miracle in the case of his ass. With regard to the supernatural powers attributed to B. the prevalent hypothesis is, that he was the last relic of the patriarchal age, during which communion with God was not formally restricted to one race, but diffused more or less among all the Semitic peoples. Some, again, suppose that his knowledge of God, from whom he apparently received miraculous communications, was derived from the traditions of the primitive faith scattered over Mesopotamia by Abraham, Jacob, Laban, etc.; though Hengstenberg conceives that he had been led to renounce idolatry by hearing of the stupendous miracles which attended the exodus of the Israelite from Egypt, anticipating, as a reward for his change of worship, a further insight into futurity, and a greater power over nature. B. has ever been considered a type of those men who prostitute their powers and hold the truth in unrighteousness, receiving the wages thereof.

BALA BEDS, *bâ'lâ:* local deposit in the neighborhood of Bala, in north Wales, forming a group in the Lower Silurian of Murchison. They consist of a few beds, rarely

more than 20 ft. in thickness; chiefly of hard crystalline limestone, alternating with softer argillaceous bands, which decompose more freely, and leave the limestone like a cornice molding, affording a characteristic by which, at a considerable distance, the Bala Beds can be distinguished from the rocks of hard gritty slate above and below. Trilobites and Cystideæ are the predominant fossils of the group. Calcareous beds, containing similar fossils, have been noticed in the Silurian district of the s.e. of Ireland, and referred to this group.

BALÆ'NA: see WHALE.

BALÆNIDÆ, n. plu. *bă-lē'nĭ-dē* [L. *balæna*, a whale; Gr. *phalaina*]: the family of the whalebone whales. BALANITE, n. *băl'ă-nīt*, fossil shells of the barnacle family.

BALÆNOP'TERA: see RORQUAL.

BALAGHAT DISTRICTS, *băl-a-gawt':* large tract of elevated country in the s. of India, 28,669 sq. m.; extending from the rivers Tumbuddra and Krishna in the n. to the furthest extremity of Mysore in the s. Part of the ancient Hindu kingdom of Carnata, it was conquered by the Mohammedans, and fell into the hands of the British on the final overthrow of Tippoo (q.v.). The name Balaghat signifies *Above the Ghauts.*

BALAK: a Mongol word meaning city; sometimes written *Balaksun.* This word is often met with in the names of cities that have been subdued either during Tartarean or Chinese invasions. It is thus that the name of the city of *Cambalu*, of which Marco Polo speaks in his very interesting voyages, ought to be read *Khambaluk* (the imperial city) (*khan* means emperor, in all Tartarean and Turkish languages); that is to say, Pekin, capital of eastern and northern China.

BALAKITG: in Kamtchatkan mythology, god of the winds; son of Khout-Khow and spouse of Zavina.

BALAKLAVA, *băl-â-klâ'vâ:* small port in the s.w. of the Crimea, separated by a rocky peninsula from the harbor of Sebastopol, from which the direct distance is about 6 m. The harbor, with secure anchorage for the largest ships, is perfectly landlocked, the entrance so narrow as scarcely to admit more than one vessel at a time. To the e., overlooking the bay from a rocky eminence, are the ruins of a Genoese fortress. The foundation of the work is excavated into numerous chambers and galleries. It is the *Symbolon Limen* of Strabo; and the present name is supposed by Dr. Clarke to be a corruption of the Genoese *Bella-chiara*, or Fair Haven. This was long the seat of a Greek colony; in the 14th c., it fell into the hands of the Genoese; about the end of the 15th, they were expelled by the Turks; and on the conquest of the Crimea by Catharine II. of Russia, it was made a military station for a regiment of Greeks and Albanians. In 1854, a few days after the battle of Alma, the town was occupied by the British army under Lord Raglan, and during the ensuing campaign, the harbor was the headquarters of the fleet, and the basis of operation of the army. Here were those scenes of mis

management and confusion, with the resulting privations and suffering, that have rendered B. a synonym for chaos. A terrible hurricane, 1854, Nov. 14, in which nine vessels were totally destroyed, and several others seriously injured, tended greatly to increase the confusion which incapacity and divided responsibility first occasioned at Balaklava. Soldiers, six miles distant, were dying for want of food, clothing, and medicine, which were hidden hopelessly beyond reach in store-rooms at B., or stowed away in the holds of ships, not permitted to enter the harbor. Transport vessels, for which the country was paying enormous sums of money daily, were kept idle in port with their most anxiously awaited cargoes (for lack of which the troops were perishing by hundreds) unladen, while poor mutilated and dying soldiers lay miserably exposed on the heights for want of ships to convey them to the hospitals at Scutari. The rebuilding of the greater part of the town, the formation of a line of railway between B. and the camp, and certain official investigations in 1855, completely remedied this disgraceful state of things. The date, 1854, Oct. 25, was signalized, on the heights between the town and the Tchernaya, by those unparalleled cavalry charges, the record of which is among the saddest but proudest memories of the British army. See Kinglake's *Invasion of the Crimea* (6 vols., 1863–80), of which nearly the whole of the fourth vol. is occupied in a minute account of the events connected with B. Pop. (1880) 700.

BALAKLEI: Sultan and Prince of a Tartarean nation, in the beginning of the 13th c. Having conquered a certain territory in 1221, at a time when the dukes of Russia were carrying on intestine war, he sent ambassadors into Lithuania to exact a tribute; but the Lithuanians cut off their ears and noses, and sent them back to their master. Thereupon the Russians and Lithuanians combined their forces, and vanquished B. in the battle of Koidanowa.

BALAMBANGAN, *bâ-lâm-bâng-gân':* an uninhabited island in Malaysia at the n. extremity of Borneo. At two different times (1774 and 1803) the English made attempts to establish themselves upon this island, but were driven away by the Soolooans.

BALAMIO, *bâ-lâ-mē'ō,* or BAL'AMY, FERDINAND: 16th c.; b. Sicily: physician to Pope Leo X. He cultivated a taste for poetry and ancient languages, and translated into Latin several treaties of Galen, since united with the Venice edition (1586).

BALANCE, n. *băl'ăns* [F. *balance*—from mid. L. and It. *bilancĭă:* Sp. *balanza*—from L. *bis*, double; *lancem*, a dish]; a pair of scales, consisting of a dish suspended from each end of a beam or lever; equality of weights, power, or force; the difference between the debtor and creditor side of an account; overplus; a sign of the zodiac—also called *Libra;* the sum due on an account: V. to make equal; to bring into equilibrium, or to poise; to deliberate or ponder upon; to adjust by paying or settling, as an account; to have equal weight, power, or influence; to weigh mentally, hence to hesitate or pause; in navigation, to steady a ship by reefing a sail with a balance-reef; in mechanics, to bring the center of gravity of a wheel, cylinder or other rotating body into accord with the axis, so that there shall be no more weight on any one side than on any other. Fly-wheels and the bucket-wheels of turbines and other heavy mechanisms that rotate rapidly require to be very accurately balanced. BAL'ANCING, imp. BALANCED, pp. *băl'anst.* BAL'ANCER, n. one who or that which balances, specifically, a tight-rope performer; a drumstick-like process seen in the fly and other dipterous insects; in reptiles, a projection in front of the gills. BAL'ANCEMENT, n. a balanced state or condition; compensation. BALANCE-BAROMETER, n. a mechanical barometer consisting of a beam having one end formed of a heavy solid substance, as iron, and the other end of a bulky substance, as a hollow sphere, of the same weight. This is balanced on a pivot, and when the atmosphere piles up and becomes more dense (indicating storm), the bulky arm rises and the solid arm sinks, because the air pressure has increased and the bulky arm therefore displaces a larger weight of air. When the air pressure reduces (indicating fine weather) the bulky arm falls and the solid arm rises. BALANCE-BOB, n. an oscillating or rocking bob, in the form of a counterpoised bent lever, rocking on an axis—originally used as a Cornish engine. BALANCE-BRIDGE, n. a bridge having a span whose weight is balanced by counterpoises connected by chains running over wheels set in a tower. Compare Bascule-bridge and Cantilever. BALANCE-CRANE, n. a form of crane in which the working arm or beam is weighted to counterbalance the load. BALANCE-ENGINE, n. one with pistons that move oppositely, or so as to preserve the balance of the mechanism, made by setting the cranks in opposition. The cylinders of automobile engines are usually balanced in this manner. BALANCE-FISH, n. a shark of the genus *Zygæna*, commonly called hammer-headed shark. BALANCE-GATE, n. a gate (as of a canal-lock or sluiceway, where it is subjected to water pressure) swung on a post in its center, so that it presents equal surfaces to the water pressure, no matter which way or how much it is turned; also a gate, as for a roadway, having a beam across the top and a counterweight thereon, to make it easy to raise the gate. BALANCE-PLOW, n. a form of steam plow designed to be drawn back and forth over a field by ropes connecting with the engine. In order to avoid the

necessity of turning it around at the end of a furrow, two plow-shares (or two gangs of plow-shares) are hung on opposite sides of a balancing bar, these pointing in opposite directions. One set of plow-shares is lowered to cross the field one way, and then by turning the balancing bar the first set goes up while the other set comes down for the reverse trip across the field. BALANCE-REEF, n. a reef-band hung diagonally across a sail, as where a gaff is used, permitting either half of the sail (above or below the gaff) to be reefed. BALANCE-RUDDER, n. a rudder, as of a ship, hung or hinged above and below near its centers, so that it can be operated more readily when backing the vessel. BALANCE-VALVE, n. one with a pressure of fluid on both sides, or (in the case of three or four apertures being controlled by one valve) on several sides, so that they normally balance. A change of pressure on any side tends to throw the valve. The triple valve of an air-brake is a familiar instance. BALANCE-RYND, n. a balanced iron bar or bent frame for supporting the upper millstone of a pair on its spindle; sometimes called also a miller.

BAL'ANCE: instrument for ascertaining the weight of bodies in grains, ounces, pounds, or any other units of weight. The ordinary B. consists of a lever called a beam, whose point of support is in the middle of its length, and having dishes or scales suspended from either extremity. As it is of importance that the beam should move easily round its point of support, it rests on polished agate or steel planes, by means of knife-edges of tempered steel, which project transversely from its sides, and serve as the axis of rotation. By this arrangement, the surface of contact is reduced to a mere line, and the friction of the axis of the beam on its support almost entirely obviated. The scales are hung by chains attached to steel hooks, which also rest on knife-edges, but turned upwards instead of downwards, as in the first case. The essential requirements of a B. of this description are: 1st, That the beam shall remain in a horizontal position when no weights are in either scale; and 2d, That the beam shall be a lever of equal arms, or have the distances between the central knife-edge and those at either end exactly the same. To insure the first of these conditions, it is necessary that the centre of gravity of the beam lie vertically below the point of support, when the beam is horizontal. When this is the case, the centre of gravity at which the weight of the beam may be considered to act, oscillates as in a pendulum round the point of support, and always comes to rest right under that point, thus restoring to the beam its horizontal position when it has been tilted out of it. If the centre of gravity were above the point of support, the beam would topple over; and if it coincided with that point, there being no restoring force, the beam would occupy indifferently any position into which it was thrown, the B. in both cases being useless. That a B. possesses the second of the above conditions, is ascertained by putting weights into the scales which keep the beam horizontal, and then transposing them, when, if it still remain so, the lengths of the

arms are equal. Should the arms be of different lengths, a less weight at the end of the longer arm will balance a larger weight at the end of the shorter arm (see LEVER); but when transposed, the larger weight having the longer arm, and the smaller weight the shorter, the beam can no longer remain horizontal, but will incline towards the larger weight. A balance with unequal arms is called a false B., as distinguished from an equal-armed or just balance. When weighing with a false B., it is usual to weigh a body in both scales, and take the arithmetical mean—that is, half the sum of the apparent weights for the true weight. This is near enough to the truth when the apparent weights differ little from each other; but when it is otherwise, the geometrical mean (q.v.) must be taken, which gives the exact weight in all cases.

Although the preceding conditions are of essential importance, they do not supply all requisites in a good balance. It is necessary, in addition, that the beam should turn visibly from its horizontal position, when there is a slight excess of weight in the one scale as compared with the other. This tendency is termed *sensibility*, and depends upon the weight of the beam, the position of its centre of

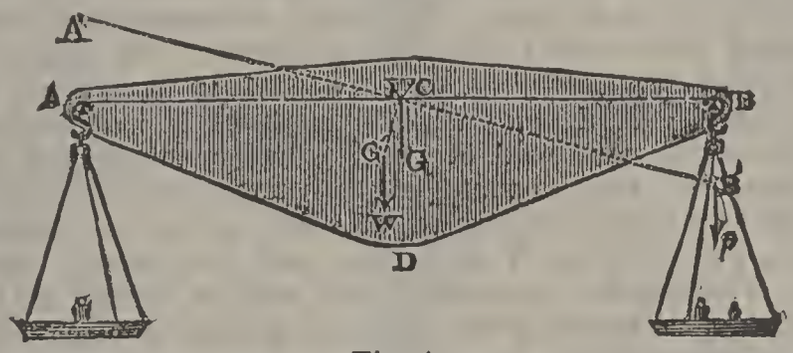


Fig. 1.

gravity, and the length of its arms. Let ABD (Fig. 1) represent the beam of a balance, C the point of suspension, G the centre of gravity, and ACB the straight line joining the knife-edges, which may be taken as the skeleton lever of the balance. The description here given relates to that construction in which the three knife-edges are in a line, because it is the most simple and the most desirable Without altering the principles of equilibrium, the beam may be considered as reduced to the lever AB, and embody its weight in a heavy point or small ball at the centre of gravity, G, connected with C by the rigid arm CG. The scales (represented small in the fig. for the sake of space), with the equal weights in them being at an equal distance from C, have their centre of gravity in that point; and their combined pressure acting there, is met directly by the supporting plane, so that they have no influence in determining any particular position of the beam. If a small weight, *p*, therefore, be put into the scale at B, the position of the beam is determined by its rotating tendency (moment) round C, and the counter-rotating tendency of the weight of the beam, W, acting at G. The question of sensibility is thus reduced to the action of the crooked lever GCB,

with p acting at one end, and W at the other. For the relations of the arms and forces of a crooked lever, see LEVER. It is necessary here only to state, that the moment of the weight acting at the end of a crooked lever, increases with its size, the length of its arm, and the smallness of the angle which that arm makes with the horizontal line passing through the fulcrum. Let us suppose that, under the effect of the opposing moments, the beam, as represented by the line AB, takes up the position marked by the dotted lines. If, now, we were to lengthen CB′, and keep CG′ as it is, CG′ would rise nearer to the horizontal line, and CB′ fall further from it, before equilibrium would be restored; and the inclination of CB′, or the beam to the horizontal line, thus being greater, the sensibility of the balance would be increased. Consequently, *the longer the arms of a B. are, all other things being the same, the greater will be its sensibility.* But the same object would be reached by keeping CB′ its original length, and shortening CG′, or bringing the centre of gravity of the beam nearer to the point of support. The weight of the balance then having a shorter arm, the point G′, for the same reason as before, would need to rise higher, and B′ sink lower, before A′B′ would find its position of rest. Here, also, *the nearer the centre of gravity of the beam is to the point of support, the greater will be the sensibility of the balance.* If now, however, we keep the length of the arms CG′, CB′ constant, but diminish the weight acting at G′, while p acting at B′ remains the same, it is manifest, that to make up the deficiency in the weight W, the two arms will turn to the left, as in the preceding cases, so as to give W a longer, and p a shorter *effective* arm. The smaller, therefore, the weight acting at G, or *the smaller the weight of the beam, the greater will be the sensibility of the balance.*

In the construction of the B., it is important to have the sensibility independent of the amount of weight in the scales, so that, when heavily loaded, a small weight will produce the same inclination as when not loaded at all. This condition is implemented, as we have already shown, when the three knife-edges are kept in the same straight line. If the line joining the two terminal knife-edges lie below the point of suspension, then the centre of gravity of the equal weights corresponding with the middle of that line, will, upon the turning of the beam, be forced from below that point, and will accordingly have a tendency to resume its former position. The equal weights thus counteract to some extent the effect of the additional weight, in causing the beam to incline, and their influence in this way will be all the greater as they themselves increase. When a B. is too heavily loaded for its strength, the three knife-edges, although previously in a line, do not retain that position, for the arms of the beam yielding to the pressure, cause the terminal knife-edges to sink below the one in the middle, and the knife-edges themselves losing their shape under the pressure, the sensibility is considerably diminished.

When a B. is very sensitive, the beam keeps oscillating

for a considerable time from one side to the other of the position in which it finally settles. Although such an instrument may be useful for physical and chemical experiments, it is not serviceable for the purposes of ordinary life, where minute quantities of the substance to be weighed are of little value, and where time, and consequently rapidity of indication, are important. The sensibility of a B. must, therefore, be adjusted to the purpose for which it is designed; sensitive balances being employed for weighing finer, and less sensitive, or *stable* balances, for weighing coarser materials. The stability, or the tendency of the beam to come quickly to rest, depends on requirements nearly the opposite of those which conduce to sensibility. In the construction treated of above, the stability increases with the moment of the weight of the beam acting at G round C, so that it thus increases with the weight of the

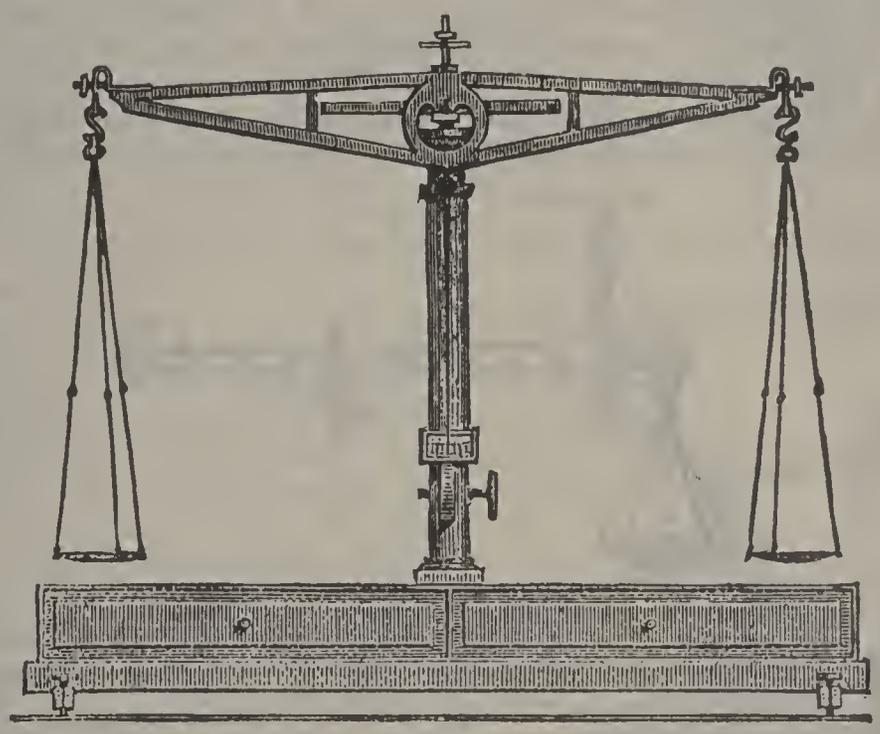


Fig. 2.

beam, and the distance of the centre of gravity from the point of suspension. The stability is also increased, as already shown, by having the line joining the scale knife-edges below the point of support.

Fig. 2 is the representation of a common form of the delicate balances employed in physical and chemical researches. The beam is constructed so as to combine lightness with strength, and rests by a fine knife-edge on an agate plane. It is surmounted by a weight moving on a screw, so that the sensibility may be increased or diminished, according as the weight is raised or depressed. In order that the knife-edge may not become blunted by constant contact with the supporting plane, a cross-bar, with two projecting pins, is made to lift the beam from the plane, and sustain its weight when the balance is not in play. The beam is divided by lines marked upon it into ten equal parts, and a small weight made of fine wire bent

into the form of a fork, called a rider, is made to slide along to any of the divisions. If the rider be, for instance, $\frac{1}{10}$ of a grain, and if, after the weight of a body is very nearly ascertained, it brings the beam, when placed at the first division next the centre, exactly to its horizontal position, an additional weight of $\frac{1}{100}$ of a grain will be indicated. The use of inconveniently small weights is, by this arrangement, to a large extent obviated. As the beam takes some time before it comes to rest, it would be tedious to wait in each case till it did so, and for this reason a long pointed index is fixed to the beam below the point of suspension, the lower extremity of which moves backwards and forwards on a graduated ivory scale, so that when the index moves to equal distances on either side of the zero point, we are quite certain, without waiting till it finally settles, that the beam will be horizontal. The same is seen in ordinary balances, only the tongue or index is above the beam; and according to its deviation on each side of the fork or cheeks by which the whole is suspended, is the future position of the beam ascertained. The finer balances are never loaded to more than a pound in each scale, and

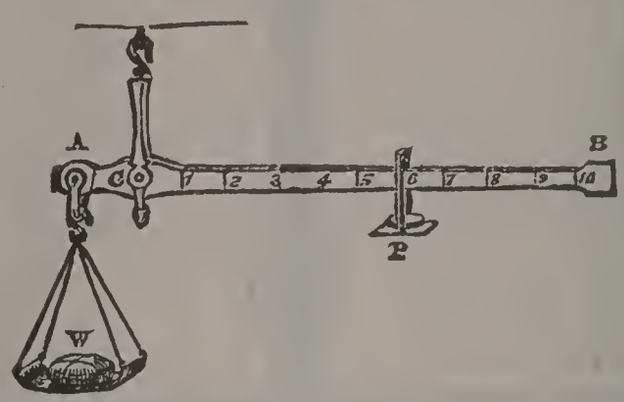


Fig. 3.

when so charged, will deflect with $\frac{1}{100}$ of a grain of additional weight in one of the scales, or will turn, as it is technically called, with $\frac{1}{115200}$ of the load. The finest balances turn with $\frac{1}{1000000}$ of the load, and some have been constructed which turned with much less. Even with the best achievements of mechanical skill, no B. can be made whose arms are absolutely equal; and to remedy this defect, the method of double-weighing is resorted to, when the utmost accuracy is demanded. This consists in placing the body to be weighed into one scale, and sand, or the like, into the other, until exact equilibrium is obtained, then removing the body, and putting weights or another body in its place which exactly counterbalance the sand. Both being thus weighed in precisely similar circumstances, must weigh precisely the same.

The Roman B., or *Steelyard* (Ger. *Schnellwage*), is more portable than the ordinary balance. It consists of a lever (Fig. 3), AB, moving round a knife-edge or point at C. The body to be weighed, W, is put into the scale which hangs from A; and a movable weight, P, is made to slide along the longer arm, until the lever, AB, remains horizontal.

The weight of W is then read off from the division at which P rests. If the lever lie horizontal when unloaded, then equal weights at equal distances from C will balance each other, so that when W is balanced by P at a distance from C equal to AC, the two are of equal weight; but if equilibrium take place when P, say, is ten times as far from C as A is, then W will be ten times the weight of P; and the same holds for any intermediate point at which P may stand, W weighing as many times P as P's arm is a multiple of W's arm. To weigh a body of 10 lbs. by the ordinary B., a counterweight of 10 lbs. is necessary, making a total load of 20 lbs.; but in the case just supposed, 1 lb. balances 10, making a total load of only 11 lbs. The steelyard has, therefore, this advantage over the common B., that the load on the fulcrum, and consequently the friction, is less. On the other hand, however, there is this disadvantage, that the arms of the steelyard bend unequally under the strain of great weights, which in a B. with equal arms cannot, to the same extent, take place. As the steelyard is ordinarily made, the longer arm preponderates when the lever is unloaded, so that the graduation of the longer arm begins at a point between A and C, and not at C. The *Danish B.* differs from the ordinary steelyard in having the weight fixed to the extremity of the lever, and the fulcrum movable.

The *Bent Lever B.* (Fr. *peson*, Ger. *Zeigerwage*), shown in Fig. 4, is a lever of unequal arms, A, C, B, moving round the pivot C, having a scale, Q, attached to the shorter arm AC, and a fixed weight, W, to the longer arm CB. The longer arm ends in a pointer moving in front of a fixed graduated arc. When a body is put into the scale, the pointer rises from the bottom or zero point of the arc, and rests opposite the mark corresponding to the weight of it.

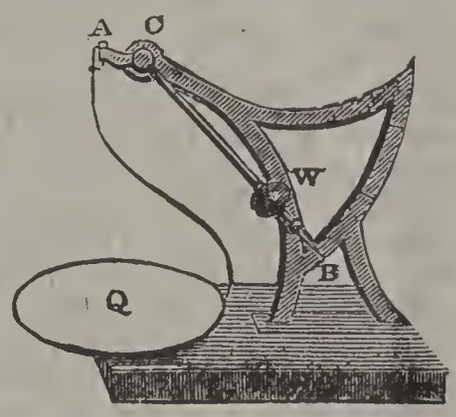


Fig. 4.

The higher the weight W rises, the longer becomes its *effective* arm, and the greater must be the weight it balances. The arc is generally graduated experimentally, the geometrical graduation being somewhat complicated.

For other weighing apparatus, see SPRING-BALANCE: WEIGHING-MACHINES.

BALANCE-, or BALANCE-WHEEL, in Watch-making, a wheel finely poised on its axis; the pivot-holes in which it turns being frequently—in chronometers and clocks, as well as in watches—jewelled, or made of small rubies, diamonds, etc., for the sake of durability. The natural effect of an impulse given to such a wheel would be a complete rotation on its axis. This, however, is convertible, by the escapement (q.v.), and by the balance-spring, into a vibratory motion. The balance-spring is held to be a crowning invention in the mechanism of the watch; and the honor of its

suggestion has been claimed for no less than three very eminent men—for Dr. Hooke, an Englishman; for Abbé Hautefeuille, a Frenchman; and for Hüygens, the Dutch astronomer. The honor, however, assuredly belongs to Hooke.

The balance-spring consists of a coil of steel wire, so delicately manufactured that 4,000 of them scarcely weigh more than one ounce, though often costing more than $1,000. In its application to the balance of a watch, one of the extremities (*e*, Fig. 1) of the spring is fastened to a point independent of the balance, while the other is attached near its axis. When the balance is at rest, the spring is not inclined either way, this position being called the point of rest; but when the impulse is given to the balance by the crown-wheel of the escapement, the balance moves round just so far as the impulse given is able to overcome the elastic resistance of the spring. When that resistance becomes equal to the impulse given, the balance stops for a moment, and then is driven back by the elastic recoil of the spring, and continues thus to vibrate so long as the impulse is repeated or the watch is in motion.

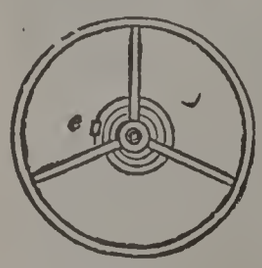


Fig. 1.

The recoil of the spring is sufficient to drive back the balance to a distance nearly double the length of its first motion; this is, therefore, called the long arc of vibration. But when the motion of the balance is free, with a certain length of spring, the *long* arc of vibration is made in less time than the short one, to which the impulse is given. with a spring of greater length this relation is reversed; whence it was concluded by Le Roy and Berthoud, that equality of time, or *isochronism*, in unequal vibrations, could be more easily obtained by lengthening the spring than by tapering it. In England, where time-keepers have been brought to their greatest perfection, it is considered that isochronism is most easily attainable by using the cylindrical helical spring (*s*, Fig. 2), which is applied to all marine chronometers.

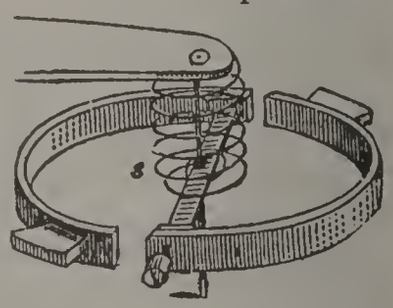


Fig. 2.

An improvement in watches, or rather in chronometers, invented by Mr. Dent of London, consists in coating the balance and balance-spring with gold by the electro-metallurgic process, by which means they are secured from rust.

BALANCE OF POWER, in European Diplomacy: a condition in which no one of the states has such preponderance as to endanger the independence of the others. This idea is not an invention of modern times. The Greek states acted upon it by a kind of instinct of self-preservation, though it was not directly formulated. It has become more distinctly avowed as a motive of political conduct, and more systematically acted upon, since the time of Charles V., whose overgrown power and ambitious designs

awakened the other European powers to the danger of such overwhelming preponderance in one state. The motive of preserving the balance of power came first distinctly into the foreground in those unions which England, Holland, and Austria, repeatedly formed against the menacing schemes of Louis XIV. for acquiring the dominion of all Europe. It was the same cause that broke up the most dangerous (for Louis) of these coalitions; for in the war of the Spanish succession, when the Hapsburg pretender to the Spanish throne became, by the death of Joseph I., sovereign of Austria and emperor of Germany, and the power which, in the hands of Charles V., had menaced the equilibrium of Europe, was thus likely to be again wielded by one man, England withdrew from the coalition, and thus saved Louis from a decided overthrow. The aggressions of Napoleon called all the powers of Europe to arms against him in the name of the balance of power; and in readjusting the map of Europe, the balance of power was often invoked to cover the jealousy which resisted not a few claims to restitution of territory. For some time, the balance of power in Europe has been embodied as it were, in a pentarchy or permanent congress of the five great powers, England, France, Germany, Austria, Russia, which mutually watch one another's movements. This jealousy among the leading powers on the score of extension of boundaries, is looked to as the great safeguard of the smaller states, preventing their absorption by their powerful neighbors. It was the dread of an adverse coalition that brought the emperor of Russia to agree to the treaty of 1841, and the Crimean war arose out of Russia's renewed attempt to extend her dominion over Turkey. Latterly, the doctrine of non-intervention has to a certain extent gained ground among politicians; and the formation of the kingdom of Italy, the results of the Franco-German war of 1870,1, and the formation of the German empire, have modified the old ideas, and brought into play new combinations whose results can hardly yet be foreseen.

BALANCE OF TORSION: an instrument invented by Coulomb for comparing the intensities of very small forces. It consists of a metallic wire suspended vertically from a fixed point, to the lower end of which a horizontal needle is attached with a small weight designed to keep the wire stretched. The magnitude of a small force acting on the end of the needle is measured by the amount of 'torsion' or twisting of the wire—the arc which the needle passes over measured from the point of repose.

BALANCE OF TRADE: difference in money value between the exports and imports of a country. In what is sometimes called the 'mercantile system' of political economy, which looks upon the possession of gold as the grand aim, or as at least the chief indication of national financial prosperity, it is naturally a maxim that a nation becomes richer in proportion as the money-value of its exports exceeds that of its imports; the excess, being paid in

gold, is so much added to the national wealth. On this theory, the balance of trade was said to be 'in favor' of the country or 'against' it, according as the exports or the imports showed the excess.

Another school of financial theorists asserts that this view rests on a twofold error; since, in the first place, the increase of national wealth is not identical with the immediate influx of hard cash; nor is gold the highest expression of national wealth, but only a means of turning real wealth and the faculty of labor to account. Further, it is asserted that the assumption that excess of exports represents excess of income, is completely false—taking exports for income (because payment is received for them), imports for expenditure (because they must be paid for); while it would be more consistent with the truth to say that exports are identical with expenditure, and imports with income; so that wealth increases in proportion as the value of the imports (what is received) exceeds that of the exports (what is given away); and it is claimed that this is the case whether these exports and imports consist solely of goods or partly of money. It may sometimes be desirable to get payment of exports in gold—that is, to import bullion. But the case in which this will be beneficial to the merchant seeking his own profit in the transaction, will be that in which it will be beneficial to the community. In the majority of cases, however, the individual merchant finds it his best policy to lay out the money due to him in a foreign country in purchasing the wares of that country as return-value. The far-sighted Venetians early recognized the truth of the principle in a national point of view; for, by a law of 1272, they laid a tax of one-fourth the value on the importation of all coined gold and silver. The 'mercantile system' of political economy, on the contrary, consistently following up the notion of the balance of trade, it is said, favors laws prohibiting importation of foreign manufactures, or imposing high duties upon them, and giving premiums and other protective encouragements for exportation; as if it were possible to go on exchanging always for gold only—ever exporting goods and goods alone, and never importing any. If this could be, and if it were true that a nation with the balance of trade constantly in its favor must become richer, while, with that balance against it, it must become poorer, England, whose official returns have for many years exhibited a large excess of exports over imports, must have had at this time about 500 million pounds in precious metals, while in reality the amount does not exceed perhaps 60 millions.

The truth is, that no safe conclusion can be drawn from the balance of trade exhibited in official statements; since from the way in which they are arrived at, a great part of the facts of the cases are necessarily left out, while an entire range of important facts are not capable of expression in statistics. Almost all nations exhibit favorable balances, and how could that be possible, if the whole presentation were not defective? In the regular legitimate commerce between two nations, both actually gain, though the gain may not

be exhibitable in the form of a money-balance. If the gains of nations from commerce consisted of differences between the amount of exports and of imports to be compensated by balances in money, nearly all nations would be yearly receiving accessions of gold and silver, the united amount of which would exceed, by more than ten times, the produce of all the mines in the world.

BALANDRA, n. *ba-lănd'ra* [Sp. and Port. *balandra*]: a kind of vessel with one mast, used in South America and elsewhere.

BALANIDÆ, n. plu. *băl-ăn'ĭ-dē* [L. *bălănus;* Gr. *balănŏs*, an acorn: Gr. *eidos*]: the family of Crustaceans, commonly known as acorn-shells: see BALANUS.

BALANINUS, n. *băl-a-nī'nŭs* [L. *balaninus*—from Gr. *balaninos*, made from the *balanos*]: genus of beetles belonging to family *Curculionidæ*. They have a long, slender rostrum, furnished at the tip with a minute pair of sharp horizontal jaws, which they use in depositing their eggs in nuts; e.g., *B. caryæ*, in hickory nuts; *uniformis* and *quercus* in acorns; *Sayi* in chestnuts.

BALANITE, n. *băl'anīt* [Gr. *balanites*, as a., acorn-shaped; as n., a precious stone]: a fossil Cirripede of the genus *Balanus*, or closely allied to it.

BALANOGLOS'SUS: a worm-like marine animal, the chief representative of the most primitive class of chordate animals, *Enteropneusta* or *Adelocephala*. This remarkable creature, the type of its class, combines characters peculiar to itself, with features reminding us of the nemerteans, annelids, tunicates, and the vertebrate omphioxus, while its free-swimming larva was originally supposed to be a young echinoderm. From the fact that the central nervous system lies above a notochord, Bateson placed it next to the vertebrates.

One American species, *Balanoglossus aurantiacus*, is a long, cylindrical, soft, fleshy worm, footless, without bristles, but with a large, soft, whitish, tongue-shaped proboscis in front arising dorsally within the edge of the collar surrounding the mouth. The surface of the body is ciliated. At the beginning of the digestive canal is a series of sac-like folds of which the upper or dorsal portion is respiratory and separated by a constriction from the lower, which is digestive, and leads directly to the intestine behind. This pharyngeal respiratory portion of the digestive canal has on each side, in each segment, a dorsal sac, the two communicating along the median line of the body. The dorsal respiratory sacs each bear in their walls a delicate chitinous gill-support or arch. Between the gill-arches, forming numerous lamellæ, are a series of slits, leading on each side to openings (spiracles), situated dorsally. The water passes through the mouth into each gill-sac, and out by the spiracles. The nervous system lies above a short sac regarded as a notochord. There is a dorsal blood vessel, which sends branches to the respiratory sacs, and a ventral vessel. The worm lives in

sand at low-water mark from Cape Ann to Charleston, S. C., also in the Mediterranean.

The life-history of this worm is most interesting. The young, originally described under the name of *Tornaria*, was supposed to be an echinoderm larva, though it resembles the larval *Gephyrea* and *Annelida*. It is a transparent, surface-swimming, minute, ciliated, slender, somewhat bell-shaped form, with black eyespecks. When transforming to the worm condition, a pair of gills arise on sac-like outgrowths of the œsophagus, and afterward three additional pairs, with their external slits, arise, somewhat as in ascidians. The entire Tornaria directly transforms into the worm, the transitional period being very short. The body lengthens, the collar and proboscis develop, afterward the body lengthens, the end tapering and becoming much coiled. Consult: A. Agassiz, *The History of Balanoglossus and Tornaria* (*Memoirs of the American Academy of Arts and Sciences*, Vol. IX, Boston 1873); *The Later Stages in the Development of Balanoglossus Kowalevskii, etc.* (*Quarterly Journal of the Microscopical Society*, London 1885–6).

BALANOPHORACEÆ, n. plu. *băl-ăn-ŏ-fŏr-ā'sē-ē*, or BALANOPHOR'EÆ, *-ē-ē:* an order of plants placed by Lindley under the class *Rhizanths* or *Rhizogens*, but believed by Dr. Hooker to have an affinity to the exogenous order *Halorageæ* or Hippurids. They are succulent, fungus-like, leafless plants, usually yellow or red, parasitical upon roots. The flowers are mostly unisexual; they are crowded together in heads or cones. The perianth in the males is generally three or six cleft; the ovary has one or two styles, but only one cell and one pendulous ovule. They occur in America, Africa, and Asia; one species occurs in Malta.

BALANTIDIUM, *băl-ăn-tid'ĭ-um:* a genus of *Infusoria*, some members of which, notably *B. coli*, have been found in the large intestine, where they cause symptoms of intestinal derangement, etc. See PARASITES; INTESTINES.

BALANUS, *băl'a-nŭs:* genus of *Cirripedia* (q. v.); the type of a family, including all cirrhopods destitute of a flexible stalk, and of which the shell is symmetrical. These characters at once distinguish them from Barnacles (q. v.). In the genus B. the base is formed usually of a thin calcareous plate, the sides of six valves; and four small valves form the operculum, exactly closing the aperture at the top. The name (signifying an acorn) was originally given by the ancient Greeks from a supposed resemblance of some of the kinds to acorns; and acorn-shell has sometimes been adopted as an English name. There are many species, and they are found in almost all seas, attached to stones, timber, shells, crustaceans, etc. They cover the rocks between high and low water-mark on many parts of the coast as with a white calcareous incrustation, so that arithmetic fails in computing, and imagination in conceiving their multitudes. They may, however, be readily passed over as individually objects of little interest when they are seen after the tide has left them, for then their valves are closed, and they ex-

hibit no sign of life; but if observed in a pool of the rocks, or anywhere under water, they present a very different and extremely pleasing spectacle, the opercular valves continually opening and shutting with a quick but nearly regular motion, while an exquisitely delicate apparatus of feathery arms or cirrhi (see CIRRHOPODA) is as frequently thrown out and retracted like a hand or a little net, to seize and carry in to the mouth the minute nutritious particles or very small animals upon which the creature feeds. Thus, the little balani, immovably fixed to the rock, or carried about at the pleasure of mollusks or crustaceans to which they adhere, obtain their food from the waters around them.

A remarkable fact in the natural history of these creatures has recently been discovered by Mr. Thompson of Cork, that in the earlier stages of their existence they are not fixed as in their adult state, but move about very actively in a succession of bounds, by means of swimming-feet like those of the *Cyclops* (q.v.); having, however, a shell, apparently of two valves, resembling a very minute muscle. Still more remarkable is the discovery made with this, that in their early locomotive state they possess large stalked eyes, which disappear with the organs of locomotion when they attach themselves—probably by the guidance of some peculiar instinct—to their final place of repose, undergoing a transformation into perfect cirrhopods, and acquiring as a covering their many-valved shell.

Some of the larger species of B. were esteemed a delicate food by the ancient Romans. The Chinese similarly esteem *B. tintinnabulum*, said to resemble lobster in taste; and *B. psittacus*, a South American species, in like manner compared to crab, is exported in large quantities from Concepcion de Chili to Valparaiso and Santiago. This species is sometimes almost four inches in diameter, the height considerably more. It is chopped off the rocks with a hatchet. The two posterior opercular valves are beaked, from which it receives the name of *Pico*, and its scientific trivial name, *psittacus* (a parrot).

BALAS, or BALASS, n. *băl'ăs*, or BALAY, or BALAIS, *băl'ā* [Sp. *balax:* F. *balais*]: lapidary's term for the varieties of the spinel ruby of a bright rose-red color inclining to orange, as distinguished from the ruby proper, which is of a bright red or cochineal color, and from the spinel ruby which is of a red hue approaching to rose-color. This last (the spinel ruby) has been recognized only in modern times. In the middle ages, only the B. ruby and the ruby proper, or *beau rubis*, as it was often called, seem to have been known. M. de Laborde thinks that the term B. was employed anciently as a name for all sorts of rubies.

BALASINORE, *băl-a-sĭ-nōr'*, or BALASINESHWAR: petty native state, or *jaghire*, of India, province of Guzerat; protected by the British govt., and politically connected with the presidency of Bombay: from n. lat. 22° 53′ to 23° 17′; from e. long. 73° 17′ to 73° 40′; about 80 sq. m. The river Mahi flows through the jaghire. The native ruler is styled Nawab of Balasinore. He has a revenue of 41,548 rupees,

of which he pays 10,000 rupees tribute to the British govt. The Nawab maintains a force of only 8 horsemen and 50 foot-soldiers, employed in revenue, police, and other services. Pop. est. 42,000.—The cap. of the jaghire, 51 m. n. from Baroda, also bears the name Balasinore. It is rather a thriving town, and is surrounded by a wall.

BALASORE, *băl-a-sōr'*: seaport in the dist. of Cuttack and presidency of Bengal, near the Boorabullung, which enters the sea to the w. of the Hoogly or Calcutta river: lat 21° 30′ n., long. 87° e., and has dry-docks and a coasting-trade; but it is entitled to notice chiefly in connection with the past, as the seat, successively, of Portuguese, Dutch, and Danish factories. It was only in 1846 that the Danes sold their interest in the place to the English.

BALATON, *bâ'la-ton*, Lake of (Platten-See): a lake, the largest in Hungary; about 55 m. s.w. of Pesth. Its extreme length is 48 m., breadth from 3 to 10 m., estimated area, including its frequently submerged marshes, 420 sq. m. Its greatest depth is 39 ft. It is supplied by upwards of thirty streams—the chief of which is the Szala—as well as by numerous springs on its margin. Its outlet is by the Sio, which discharges into the Sarvitz, a feeder of the Danube. The waters of B. are clear and transparent, except when they are agitated by a storm, when they assume a bluish color. They have a slightly brackish taste. Fish of various kinds are abundant, and sand impregnated with iron, interspersed with which are small garnets, rubies, and other precious stones, is taken from it. Woods and vineyards cover the hills which encircle its n. sides, and on its banks near the town of Füred there is a spring of acidulous water. The surrounding country is rich in rare plants and mineral treasures, and was the scene of several bloody conflicts during the Hungarian war (1848,9). The lake figures prominently in the old romantic ballads of the Magyars.

BALAUS'TA: see Berry.

BALAUSTINE, n. *bă-laws'tĭn* [Gr. *balaus'tĭŏn*, a pomegranate flower]: the wild pomegranate tree. Balausta, n. *bă-laws'tă*, fruit formed like the pomegranate; an indehiscent fruit, with many cells and seeds, the seeds being coated with pulp.

BALAY, or Balais: see Balas.

BALBI, *bâl'bē*, Adriano: 1782, Apr. 25—1848, Mar. 14, b. Venice: geographical and statistical writer. In 1808, he gained so much credit in Italy by his first geographical work, that he was appointed prof. of geography in the coll. of San Michele at Murano, and in 1811, prof. of physics in the Lyceum at Fermo. Subsequently he resided in Portugal, then went to Paris, to superintend the publication of his *Essai Statistique sur le Royaume de Portugal et d'Algarve* (2 vols., Par. 1822); soon followed by the *Variétés Politiques et Statistiques de la Monarchie Portugaise* (Par. 1822). He was the intimate friend of Malte Brun, from whose papers he, jointly with Larenaudière and Huot, published the *Traité Élémentaire de Géographie* (2 vols., Par. 1830–34).

He published several works of comparative national statistics. His *Atlas Ethnographique du Globe* (Par. 1826) is distinguished by its extensive accumulation of facts and views, giving an account of German researches on the subject, and entering into questions of comparative philology. B.'s best known work is, however, the *Abrégé de Géographie* (3d ed., Par. 1838), which has been translated into several languages. In 1832 he returned to Italy, and settled at Padua, where he died. A collection of his *Scritti Geografici* was made by Eugenio Balbi (5 vols., Turin, 1841,2).

BALBI, GASPARO: Venetian merchant of the 16th c., worthy of mention as the first traveller who has left an account of India beyond the Ganges. In his business B. was often led to Aleppo, and thence, on one occasion, he went to India, remained several years, and returning to Venice, published, 1590, a vol. entitled *Viaggio all' Indie Orientali.* A Latin translation was printed in De Bry's *Collection of Voyages and Travels to the East Indies,* Frankfort, 1590–94. B. appears to have set down, without exaggeration, all that he himself saw, and is particularly minute and exact concerning commercial matters; but there is scarcely any limit to his credulity with regard to what he heard from others about the country. From Aleppo, his journey was down the Euphrates until opposite Bagdad; thence down the Tigris to Bassorah, where he embarked for the Malabar coast. Having visited Goa and Cochin, and other Portuguese settlements, he sailed for Pegu, then an independent empire, where he remained two years, returning by the same route. The most interesting part of his narrative is that relating to Pegu.

BALBINUS, *băl-bī'nŭs,* DECIMUS CÆLIUS, Emperor of Rome; d. 242: one of two emperors whom the senate elected (on hearing of the death of the elder Gordianus, and his son, in Africa), in opposition to Maximinus, who had the support of the legions in Germany. He was celebrated as orator and poet, and was a man of mild disposition. His coadjutor, Marcus Clodius Pupienus Maximus, was a bold and resolute soldier who had risen from the people. They had only reigned a few months—during which time Maximinus had been killed by his own soldiers, who afterwards submitted to Maximus—when they were both killed by the prætorians, who at that time were animated by bitter hostility to the civilians, and extended it to the rulers who had been elected by them.

BALBO, *bäl'bo,* CESARE: 1789, Nov. 21—1853, June 3; b. Turin: Italian statesman and author. When 18 years old, B., whose father had Napoleon's patronage, was appointed auditor of the council of state in Paris, and 1812 he was made commissioner for the Illyrian provinces, ceded to France by the peace of Vienna. After the fall of Napoleon, B. went to London as sec. of the Sardinian embassy. Turning to historical studies, he produced (1821–43) *History of Italy* (only to the reign of Charlemagne): and a translation with commentary of Leo's *Development of the Constitution of the Lombardic Towns;* also *Speranze*

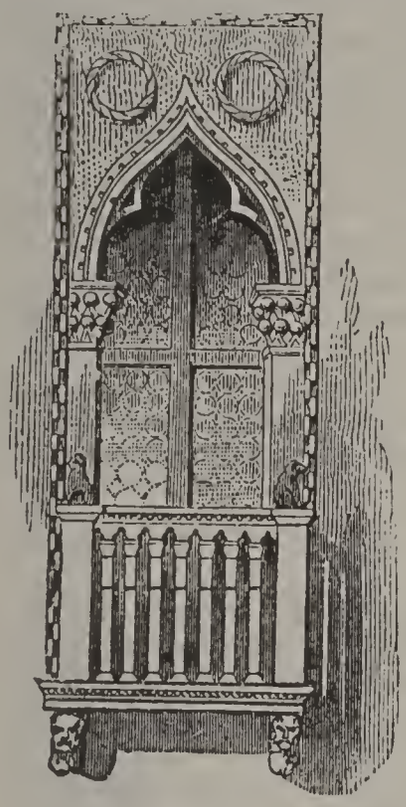
d'Italia ('Hopes of Italy'), pub. 1843, which extended his literary reputation to foreign countries. One of its main objects was to prove that national independence must precede the enjoyment of constitutional liberty; and that to strive after the latter, however good in itself, while the former had not been secured, was foolish and reprehensible. It gave a vivid and intelligent picture of the political condition of Italy, its aims and prospects. His compendium of Italian history (*Della Storia d'Italia,* etc.) also was successful. B. was prominent as a moderate liberal in the political movements of 1847,8, and subsequently supported the ministry of Azeglio. He was a man of unspotted character. In all his writings B. adhered strongly to the Rom. Cath. Church, whose truth he conceived to be the healing of nations and the only source of true culture.

BALBOA, *bâl-bō'â,* VASCO NUÑEZ DE: Spanish conqueror: 1475–1517; b. of a noble but reduced family at Xeres-de-Caballeros. After a dissolute youth, he gladly took part in the great mercantile expedition of Rodrigo de Bastidas to the new world. He established himself in St Domingo, and began to cultivate the soil; but coming into financial straits, he escaped from his creditors, embarking secretly on a ship, and joined the expedition to Darien, 1510, commanded by Francisco de Enciso. Destined to discover the eastern shores of the largest ocean on the globe, he was yet compelled to secrete himself in a cask before he could share in the new enterprise. An insurrection obtained for B. the supreme command in the new colony. Confused accounts which reached him of a great western ocean, impelled him, 1513, to set out in quest of it, and, Sep. 25, he obtained the first sight of the Pacific Ocean from a mountain-top in the Isthmus of Panama. His natural enthusiasm at this great discovery was shared by all the educated men of his time, and the descriptions of it by contemporary authors may still be read with much interest. The governorship of the territories conquered by B. was obtained 1514 by Pedrarias Davila, by intrigues at the Spanish court. B. resigned the command into the hands of the new governor, a narrow-minded and cruel man, and, in a subordinate situation, undertook many successful expeditions; but these, and all his other merits, only served to increase the hatred of Pedrarias Davila towards him. The government of the mother-country sought in vain to mediate between them, and B. even married the daughter of Pedrarias. But on the first occasion of dispute which arose, B., having been induced by Pedrarias to deliver himself up, was accused of a design to rebel, and in violation of all forms of justice was beheaded at Santa Maria.

BALBRIGGAN, *bal-brig'gan:* small maritime town in Dublin county, 22 m. n. of Dublin; a seat of cotton, calico, and stocking manufactures. The cotton stockings made here are remarkable for fineness of texture and beauty of open work. Many women are employed in embroidering muslins. B. is a favorite watering-place. After the battle of the Boyne, William encamped here. Pop. (1891) 2,273

BALBUTIES, n. *băl-bū'tĭ-ēz* [Fr. *balbutie*, inarticulateness bad pronunciation—from *balbus*, stammering]: in *med.*, stammering.

BALCONY, n. *băl'kō-nĭ* [F. *balcon*, a balcony—from It. *balcone;* Pers. *bala khaneh*, an upper chamber]: a projecting gallery in front of windows, or elsewhere on a house-wall, with a balustrade or parapet before it, and supported by consoles, or brackets fixed in the wall, or by pillars from below. The B. was unknown in Greek and Roman architecture, the earliest examples occurring in Italy. Balconies constructed of wood are very frequent in the cottage architecture of Switzerland, to which they add picturesqueness. BALCONIED, a. *băl'kō-nĭd*, having balconies.



Balcony.

BALCONY, in naval construction: the gallery or stern-walk outside the stern of a large ship. Three-deckers have two such balconies, and two-deckers one. Where there are two, the lower is connected with the admiral's state-cabin, and the upper with the captain's cabin.

BALD, a. *bawld* [Gael. *bal* or *ball*, a spot; W. *bali*, whiteness: Fin. *paljas*, naked, bare: Dan. *bældet*, unfledged. Gr. *balĭŏs*, speckled with white hair: Sp. *pelado*, hairless]: wanting hair; destitute of natural covering; naked; inelegant; mean; in *bot.*, without beard or awn; having a white mark on the face. BALD'LY, ad. *-lĭ*. BALD'NESS, n. state of being bald; the want of natural covering, as the head without hair on its crown, or the top of a hill when bare of trees. BALD FACED [F. *belleface*]: having a white mark on the face, as a stag. BALD-COOT, a black aquatic bird with a conspicuous excrescence of white skin above its beak. BALD-PATE, a. or n. *-pāt*, or BALD-PATED, a. *-pā'tĕd*, destitute of hair on the head; shorn of natural covering.

BALDACHIN, n. *băl'dă-kĭn* [It. *baldacchino;* Sp. *baldaquino*, a canopy (see BAUDEKYN)]: in *arch.*, structure within a building in the form of a canopy or tent, usually of costly materials, supported by columns, or fastened to the wall, placed over portals, thrones, altars, pulpits, couches, etc. One of the most celebrated is the B. in the church of St. Peter's, Rome, cast in bronze by Bernini, supported on four large twisted columns. B. was the name also formerly given to a kind of umbrella of a square form, made of silk brocade or other rich material, and supported on four poles, which was wont to be carried in the middle ages at solemn processions, coronations, marriages, etc., over the heads of royal personages or high dignitaries

as a symbol of their rank. In Europe, the portable B. is now used chiefly in the processions of the Rom. Cath. Church. It is generally borne over the priest who carries the Host. The word B., as well as the thing itself, comes from the east, where, partly as a protection from the burning rays of the sun, partly as a symbol of their power and dignity, the rulers and great personages seldom appeared in public, whether on foot or on horseback, in a litter or on an elephant, without a splendid canopy, often borne by the great men or chief officers of their kingdom. These canopies, generally made in the form of a tent or umbrella, were often sent, in the early part of the middle ages, as presents from eastern princes to those in the west; as, for example, from the Caliph Harun-al-Raschid to Charlemagne. During the Crusades, and the consequent trade with the east, they became well known to the Italians. Such canopies, as well as the rich stuffs of which they were made, were called, from the land whence they came, Babylonica; and also Baldachins, from Baldach, the eastern name of the city of Bagdad.

BALD EAGLE, or WHITE-HEADED EAGLE: see EAGLE: ERNE

BALDER, or BALDUR, *bâl'dĕr:* a divinity worshipped by the ancient Scandinavians, and probably also by the other Germanic nations; the hero of one of the most beautiful and interesting of the myths of the Edda. B., who, according to old northern mythology, was the second son of Odin and Frigga, and the husband of Nanna (maiden), dreamed evil dreams which threatened his life. When he related them to the gods, they held a council, and endeavored to secure his safety. Frigga took an oath from fire and water, from iron and all metals, from stones, earth, and plants, beasts and birds, the serpent, poison, and all diseases, that they would not harm Balder. After this, the gods in their mirth sported with B., wrestled with him, and cast darts at him, but nothing could injure him. While the gods rejoiced at this, the thing displeased Loki (mischievous cunning or destructive fire). He changed himself into the form of an old woman, and inquiring the cause of the invulnerability of B., was told by Frigga that all things, animate and inanimate, had sworn not to harm him, with the exception of one little shrub, the mistletoe. Loki went in haste to fetch this shrub, and taking it to the assembly of the gods, placed it in the hands of the blind Höder, the god of war, directed his aim, and B. fell pierced to the heart. The sorrow of the gods was unutterable. Frigga asked who, to win her favor, would journey to Hel —the goddess of Hades or the grave—to release Balder. Hermoder or Helmod (the heroic), the son of Odin, readily offered his services, and Hel consented to grant his request on condition that all things should weep for Balder. All men, all living beings, and all things wept, save the witch or giantess Thöck (stepdaughter of Loki), who refused to sympathize in the general mourning. B. was therefore obliged to remain in the kingdom of Hel until the end of the world.

The myths of B. have been very differently interpreted.

According to some writers, B., as the originator of all that is beneficent and good—for B. and the other *sons* of Odin (see SCANDINAVIAN MYTHOLOGY) are only personified aspects or functions of the dimly-conceived one unseen Power that moves all nature—is represented as a hero of so lovely and graceful a manly beauty, that a brilliant light streams from his person; the whitest of the northern flowers is named *Balders-brow.* As the god of peace of the Germanic nations, who conducts to peace through battle and victory, he is a purely ethical conception, a mythical personification of the peace obtainable through conflict, and agreed to by compact among the gods. The gods, foreseeing doubtless that peace cannot long endure, seek in every possible way to secure the precious life of B., as even the weakest and most insignificant have it in their power to destroy peace. Loki, in his symbolical character as the god of retributive justice, stirs up Höder, or War, through whom the god of peace falls. Höder, indeed, is also slain by Wali, or Val-fader, the battle-god, and the war is ended by a bloody overthrow; but once violated and broken, peace is irrevocably lost together with Balder. Hermoder or Helmod labors in vain to restore it, for the giantess Thöck (retaliation, revenge) prevents it. Holy and true peace can revive only in a new world, when the old sinful world and the old guilt-stained gods now ruling it shall have been destroyed.—Others (among them Max Müller) see in the myth of B. only a representation of the contest between Winter and Summer. The tale of B. has been repeatedly treated by English poets, as by Dobell. See the works of Petersen, Wagner, Bügge.

BALDERDASH, n. *bawl'dĕr-dăsh* [W. *baldorddi*, to babble or prate: Dut. *balderen*, to bawl: Icel. *baldrast*, to make a clatter: Dan. *buldre*, to make a loud noise]. words jumbled together without sense, taste, or judgment; jargon.

BALD-LOCUST, n. [Heb. *salgham*, *saleam*, or *salam*—from E. Aram. *salgham*, *saleam*, or *salam*, consumed]: a winged and eatable species of locust, not yet properly identified.

BALD-MONEY, n. *bawld'mŭn-i*, or BAWD'MONEY [a corruption of L. *valde bona*, exceedingly good]: Eng. name of the *Meum*, a genus of umbelliferous plants. One species, *M. athamanticum*, has a fusiform root, eaten by the Scottish Highlanders as an aromatic and carminative. The whole plant has a strong smell.

BALDNESS (*alopecia*): absence of hair on the head, or on parts of it. See HAIR. There are some rare cases on record in which the hair has never been developed. This is termed *congenital baldness.*

Accidental baldness may involve the whole scalp, or may be only in patches; these patches may run into each other; hence some consider this condition a species of ringworm. It is caused, says Sir Erasmus Wilson, by an atrophy of the hair-follicles (q v.). B. in the comparatively young and middle-aged may occur from wearing waterproof caps, which, by preventing evaporation from the head, occasion

an unhealthy state of skin. Naval and military officers are liable to B. arising from this cause.

Senile baldness (calvities) is not necessarily the consequence of age—it may arise, like the preceding variety, from an atrophy of those parts on which the hairs depend for nutrition. It begins usually on the crown of the head, where the supply of blood is naturally less abundant. Women have more of soft tissue under the skin, therefore the vessels are less likely to be interfered with; hence they are not so frequently bald as men.

The causes of B. are the defective supply of nutrition just mentioned, a family tendency, late hours, dissipation, but especially old age. The hair falls off after severe illnesses, or after other causes of general debility. During pregnancy the hair falls out; and the long hair of young women, victims to consumption, is sometimes almost completely shed.

Treatment of baldness consists in attention to cleanliness, and in exciting the languid circulation of the scalp to greater activity, by using a hard hair-brush, and the application of stimulants, as the Spanish-fly ointment in the proportion of two drachms to an ounce of lard mixed with about the same quantity of pomatum. Or the stimulants may be applied in the form of lotions. But at the same time constitutional debility should be remedied by attention to the various functions of the body; tonics should be administered; and, if possible, causes of anxiety or night-watching should be avoided. Shaving the whole head is sometimes resorted to. If these remedies are successful, downy white hair, like that of an infant, begins to grow, which may or may not acquire the color and vigorous appearance of the former growth.

BALDO, *bâl'dō*, MON'TÉ: mountain of Lombardy, on the e. of Lake Garda; elevation 7,100 ft. It contains interesting petrifactions, and the fine green sand known as the sand of Verona.

BALDRICK, n. *bawl'drĭk*, or BAUDRICK, *baw'drĭk* [mid. L. *baldreĭ'ĭus;* F. *baudrier*, a baldrick: Icel. *belti;* L. *baltĕŭs*, a belt]: a band or sash worn partly as a military and partly as a heraldic symbol. It passes round the waist as a girdle, or passes over the left shoulder, and is brought down obliquely under the right arm, or is suspended from the right shoulder in such a way as to sustain a sword. Many of the effigies of knights contain representations of the B., more frequently as a belt than a shoulder-sash. Old French forms of the word found are *baldret*, *baldrei*, from the Old High German *balderich*, a girdle, an extension of *balz*, a belt.

Baldrick.

BALD-TYRANTS, n. pl.: Eng. name of genus of birds, *Gymnocephalus*, belonging to family *Ampelidæ*. Its habitat is S. America. Its name is derived from the absence of feathers on a considerable portion of its face.

BALDUNG, *bâl'dûng*, HANS, called also Hans Grün: abt. 1470–1552; b. Gmünd, Swabia; d. Strasburg: German painter and wood-engraver, contemporary of Albert Dürer, to whom, in expression, coloring, and finish, he was little inferior as a painter. His master-piece, a painting of the Crucifixion, is in the cathedral of Freiburg; his wood-engravings are numerous.

BALDWIN I., *bawld'wĭn*, first Latin Emperor of Constantinople: 1171–1206; b. Valenciennes; son of Baldwin, Count of Hainault, and Margaret, Countess of Flanders. In 1193, he succeeded to his mother's possessions, and 1194 to the title and county of his father. In 1200, he appointed his brother Philip, with other persons, to the regency of Hainault and Flanders, and joined the fourth Crusade. Part of the Crusaders—B. among others—were induced to assist the Venetians in reconquering Zara, in Dalmatia, from the king of Hungary. While at Zara, the young Alexis, son of Isaac II., Emperor of Constantinople, craved the assistance of the Crusaders against his uncle Alexis Angelus, who, having deposed and blinded Isaac II., had usurped the throne. In return for their aid, he promised them a liberal sum of money, and also to help them to recover Palestine. The Crusaders agreed, and soon defeated the usurper's forces, and restored the rightful emperor; but Alexis having some difficulty in carrying out his promises, they turned their arms against him. A revolution broke out in the city at the same time, Alexis the younger was murdered, and his father is said to have died of grief. Alexis Ducas Murzuphlus then usurped the throne, but was defeated by the Crusaders, and the city was sacked—the Crusaders and Venetians sharing the booty. B. was chosen emperor, and crowned 1204, May 9; but he received only about a fourth part of the empire—Constantinople and Thrace—the Venetians obtaining the greater share of the provinces. A part also fell to the French adventurers who accompanied the expedition, and several provinces remained in the hands of Greek princes. The abilities of B.—and they appear to have been superior—were not adequate to so anomalous a position. The Greeks were discontented; and, backed by Calo-Joannes, King of Bulgaria—while B.'s brother, with the flower of his troops, was away on an expedition in Asia—they rose and massacred the Latins scattered through the towns of Thrace, and made themselves masters of Adrianople. B. laid siege to the town with the forces at his disposal; but was defeated and taken prisoner by the Bulgarian king, and died in captivity about a year afterwards. He was succeeded by his brother Henry.

BALDWIN II., Emperor of Constantinople: b. 1217; son of Peter de Courtenay and Yolanda, Countess of Flanders, sister of Baldwin I. Being but 11 years old

when, by the death of his brother Robert, he succeeded to the throne, he was placed under the guardianship of John of Brienne, titular king of Jerusalem, who died about 1237. B. then assumed the rod of empire, but he had neither the means nor the ability to hold it against his powerful Greek and Bulgarian opponents. Two begging-visits to Western Europe, in one of which he left his son Philip in pledge at Venice for a debt, and disposed of several most holy relics for money, did not procure sufficient forces to resist his foes; and, 1261, July 15, his capital was taken at night by one of the generals of Michael Palæologus, ruler of Nicæa, and B. fled to Italy. With him terminated the Latin Empire in the East, after it had lasted 57 years. His descendants for more than a century retained the title of emperor.

BALDWIN I., King of Jerusalem: 1058–1118 (reigned 1100–18); youngest bro. of Godfrey de Bouillon (q.v.), Duke of Lower Lorraine or Brabant. He was in the first Crusade: but having quarrelled with Tancred, he retired to Edessa, at the request of the Christian inhabitants of the place, and was soon elected Count of Edessa. After the death of his brother Godfrey, 1100, he became Protector of the Holy Sepulchre, and Baron of Jerusalem, and immediately assumed the regal title, which his brother had refused. He conquered Cæsarea, Ashdod, and Tripolis, and with the assistance of a Genoese fleet, he became master also of Acre, and subsequently of Sidon, but failed to reduce Ascalon. Unlike his brother, who was a disinterested enthusiast, B. was worldly and ambitious.

BALDWIN II. (Baldwin du Bourg), King of Jerusalem: succeeded his cousin Baldwin I., who had made him Count of Edessa when he ascended the throne of Jerusalem; reigned 1118–31. During his reign Tyre was taken, 1124, with the assistance of a Venetian fleet; and the order of the Templars was instituted. Having been taken prisoner by the Turks, B. endured a captivity of six months. He died 1131, Aug. 21, leaving four daughters. Shortly before his death he resigned the crown in favor of his son-in-law, Foulques of Anjou, who reigned till 1134.

BALDWIN III., King of Jerusalem: 1129–62 (reigned 1143–62); son and successor of Foulques of Anjou. He was a model of knighthood, which, during the period of the first Crusades, was a personification of Honor, Justice, Devotion, and Love. Edessa was lost to the Christians during his reign. In 1152, he fought victoriously at Jerusalem against Noureddin, the sultan of Aleppo. In 1157, after he had defeated the same prince at Jacob's Ford, on the Jourdan, he again humbled him severely near Putaha. After this, he ruled in peace, and endeavored to improve both the external and internal defenses of his kingdom. The authority and influence of B. were so great, that even Saracens followed under him the banner of the Cross. By his marriage with Theodora, the daughter of the Greek Emperor Manuel, he gained a faithful ally in that prince. He died, of poison, at Tripolis, Syria, 1162, Feb. 10. With

his death the Christian power in the East began to decline. He was succeeded in the government by his brother Amalric or Amaury, who d. 1173.—Amalric was succeeded by his son, BALDWIN IV., surnamed the Leper (reigned till 1183).—BALDWIN V., son of Sybilla, sister of Baldwin IV., was called to the throne, a child, five years of age: d. 1187, a year before Jerusalem was retaken by Saladin.

BALDWIN, ABRAHAM: statesman: 1754–1807. He studied at Yale, graduating 1772, and after acting as a tutor four years, was a chaplain in the revolutionary army until 1784, when he settled in Savannah, Ga., and was sent to the legislature. He was a member of the continental congress, of the constitutional convention of 1787, of the U. S. house of representatives 1789–99, and of the U. S. senate 1799–1807. It is said of him that the latter body owed to him its existence through his course in the constitutional convention. B. founded the Univ. of Ga. and Baldwin co., Ga., was so named in commemoration of his services.

BALDWIN, CHARLES H.: naval officer: 1822, Dec. 23 —1888, Nov. 17; b. New York. He was entered as midshipman in the U. S. navy 1839, Apr. 24; became passed midshipman 1845, July 2, and lieut. 1853, Nov. He served on the Pacific coast during the Mexican war, and resigned 1854, Feb. 28. In 1861 he re-entered the service as acting lieut., and commanded the steamer *Clifton* during Farragut's passage of the forts below New Orleans and at the siege of Vicksburg. He was promoted commander 1862, Nov. 18; capt. 1869, June 12; commodore 1876, Aug. 8; rear-admiral 1883, Jan. 31; and retired 1884, Sep. 3. He d. 1888, Nov. 17.

BALDWIN, EVELYN BRIGGS: aritic explorer: b. Springfield, Mo., 1862, July 22. He was graduated from Northwestern College, Naperville, Ill., and engaged chiefly in teaching until 1892, when he entered the United States Weather Bureau service. He is now an inspector-at-large of the signal corps of the United States army. He accompanied, as meteorologist, Peary's North Greenland expedition, 1893–4; joined the Wellman Polar expedition, 1898–99, as second in command, built Fort McKinley, and discovered Graham Bell Land. Securing the cooperation of Mr. William Ziegler of New York he organized and commanded the Baldwin-Ziegler expedition of 1901. He has written *The Search for the North Pole, Auroral Observations, Franz-Joseph Land, Meteorological Reports of the North Greenland Expedition* (1893–4), and meteorological publications in government reports.

BALD'WIN, FRANK D.: American military officer: b. Michigan, 1842, June 26. He entered the volunteer army in 1861 and the regular army in 1866; became colonel of the 4th United States Infantry, 1901, July 26, and was promoted brigadier-general United States army, 1902, June 9. He was awarded a Congressional medal of honor for service at the battle of Pine Tree Creek, Ga., 1864, July 20, and

another for gallantry in an action against Indians in Texas He greatly distinguished himself in the Philippines in the early part of 1902.

BALD'WIN, Henry: American jurist and author: b. New Haven, Conn., 1780, Jan. 14; d. Philadelphia, Pa., 1844, April 21. A graduate from Yale College in 1797, he studied law, became a barrister, and settled in Pittsburg, Pa. In 1817, and twice subsequently, he was elected a Federal member of Congress. He was appointed justice of the United States Supreme Court in 1830, and in the same year received the degree of LL.D. from his *alma mater*. He wrote *A General View of the Origin and Nature of the United States* (1837).

BALDWIN, Henry Porter: American politician: b. Coventry, R. I., 1814, Feb. 22; d. Detroit, Mich., 1892, Dec. 31. He went to Michigan in his youth and from 1869 to 1873 was governor of the State. From 1879 to 1881 he sat in the United States Senate. He was very prominent in the affairs of the Episcopal Church in Michigan.

BALDWIN, James: American author: b. Hamilton county, Ind., 1841, Dec. 15. Very largely self-taught, he was engaged in teaching from 1865 to 1887. He filled an editorial position with Harper & Bros. 1887–93, when he became editor of school books for the American Book Co. He has written: *Story of Siegfried* (1882); *Story of Roland* (1883); *Six Centuries of English Poetry* (1892); *Old Greek Stories* (1895); *A Book Lover* (1884); *A Story of the Golden Age* (1886); *The Book of Elegies* (1892); *The Famous Allegories* (1893); *Choice English Lyrics* (1893); *Old Stories from the East* (1895); *Four Great Americans* (1896); *The Discovery of the Old Northwest* (1901); *The Conquest of the Old Northwest* (1901), *Hero Tales Told in School* (1904); *Abraham Lincoln, A True Life* (1904); *A Fairy Reader* (1905), etc.

BALDWIN, James Mark: American psychologist: b. Columbia, S.C., 1861, Jan. 12. He was educated at Princeton College, Leipsic, Berlin, and Tübingen universities; was instructor of German and French at Princeton 1886–87; professor of philosophy in Lake Forest University 1887–89, and in the University of Toronto 1889–93; and professor of psychology at Princeton University from 1893 to 1903; and since 1903 professor of philosophy and psychology at Johns Hopkins University. He was vice-president of the International Congress of Psychology at London 1892; honorary president of the International Congress of Criminal Anthropology at Geneva 1896; president of the American Psychological Association 1897–98; judge of award at the World's Columbian Exposition 1893, was awarded a gold medal by the Royal Academy of Arts and Sciences of Denmark, in 1897, for the best work on the general question of social ethics; and was elected a member of the Institut International de Sociologie 1898. He is author of *Handbook of Psychology* (2 vols., 1889–91); a translation of Ribot's *German Psychology of To-day*

(1886); *Elements of Psychology* (1893); *Social and Ethical Interpretations in Mental Development* (1897), etc. He was also one of the founders of the *Psychological Review*, editor-in-chief of the *Dictionary of Philosophy and Psychology*, and a contributor of articles on psychology to *Johnson's Universal Cyclopædia* (1892–95).

BALDWIN, JEDUTHAN: soldier: 1732, Jan. 13—1788, June 4; b. Woburn, Mass. During the old French and Indian war, 1755, he was in command of a company. In 1774–5 he was a member of the Mass. provincial congress, and was one of those who earliest responded to the call of the colonies for volunteers at the outbreak of the revolution. He was in the expedition against Crown Point, and designed the fortifications erected for the defense of Boston. He was commissioned as asst. engineer and capt., lieut. col. and col. in one year, 1776; served at Ticonderoga, in New York, and elsewhere; and resigned 1782.

BALDWIN, JOHN DENISON: author: 1809, Sep. 28—1883, July 8. His early life was a struggle for education, and having a religious tendency he entered the church, and became pastor of the Congl. church at N. Branford Conn., 1833. At the same time he contributed to magazines and newspapers, became an authority on American archæology and edited the Hartford *Charter Oak* and Boston *Commonwealth;* and from 1859 was owner and editor of the Worcester *Spy*. He was a member of congress from 1863 during three terms. He wrote *Prehistoric Nations* (1869), and *Ancient America* (1872), the latter esteemed as a lucid exposition.

BALDWIN, LOAMMI: soldier: 1745, Jan. 21—1807, Oct. 20; b. Woburn, Mass. He was educated at Harvard, studied engineering, and became a surveyor. He joined the continental army as major, and was in the battles of Lexington and Long Island, and at Trenton, 1776, Dec. 25, when Washington surprised the Hessians. He was promoted col., but resigned 1777 on account of ill health. He became Sheriff of Middlesex co., Mass., 1780, and held that office 14 years. He was a member of the state legislature 1778–81, and supt. of the Middlesex Canal 1794–1804.—His son, LOAMMI B. (1780, May 16—1838, June 30), b. Woburn, Mass., was an engineer, and he constructed the dry-docks at Charlestown and Newport.—Another son, JAMES FOWLE B. (1782, Apr. 29—1862, May 20), b. Woburn, Mass., was engaged in railroad and water-works engineering, and devised the plan for the Boston water-works.

BALDWIN, MATTHIAS WILLIAM: locomotive builder: 1795, Dec. 10—1866, Sep. 7; b. Elizabethtown, N. J. His father was a carriage-maker, who died in poor circumstances, leaving a widow and five children, and Matthias at the age of 16 was apprenticed to a jeweler in Frankford, Penn. He showed unusual artistic capacity and originality, but soon left this trade and engaged in making bookbinders' tools, and engraving cylinders for calico

printing. He also invented and patented a very successful gold-plating process. He began the construction of locomotive engines 1830, and placed his first one, 'the Ironsides,' on the Philadelphia and Germantown railroad, 1832, Nov. 23. In 1835 he established the Baldwin Locomotive Works, in which he made about 10 engines in the first 3 years; and before his death he had sent out of his shops 1,500 locomotives, and had acquired fame in many lands. B. introduced many improvements in construction, notably the flexible truck locomotive, patented 1842. He gained large wealth, interested himself in horticulture and the fine arts, and contributed liberally to churches and charities. He was a member of the Penn. legislature, 1853.

BALDWIN, Maurice Scollard, Canadian clergyman: b. Toronto, 1836, June 21. He was graduated at Trinity College in that city 1862; became rector of St. Luke's Church in Montreal; was dean of Montreal 1882–83; and in the last year was made Bishop of Huron. He published *Break in the Ocean Cable, Life in a Look*, etc.

BALDWIN, Robert, Canadian statesman: b. Toronto, 1804, May 12; d. there 1858, Dec. 9. He began to practise law in 1825, and four years later became a member of the Assembly of Upper Canada. He was solicitor-general in 1840 and premier and attorney-general of Upper Canada 1842–43. He was long prominent as a Reform leader in Canada, but retired from office in 1851.

BALDWIN, Roger Sherman: statesman; 1793, Jan. 4—1863, Feb. 19; b. New Haven, Conn.; of old Puritan stock; son of Simeon B., and on his mother's side, grandson of Roger Sherman. He garduated at Yale 1811; studied law in his father's office, and at the law school in Litchfield, Conn.; and was admitted to practice 1814. He became at once noted for eloquence and skill before a jury, also for never undertaking a case unless convinced of its justice. He appeared in many important trials, and was associated with John Quincy Adams in the celebrated case of the 'Amistad captives,' 1839, in which the claim of property in slaves adrift on the high seas was in question. His conduct of this case showed legal ability of the highest order. He was elected to both houses of the legislature of his state, was gov. 1844 and the succeeding term, and U. S. senator 1847. He was one of the presidential electors 1860; and was appointed a member of the peace congress 1861 to negotiate with the southern seceding states, which failed of result.

BALDWIN, Simeon Eben, American jurist: b. New Haven, Conn., 1840, Feb. 5. He is a great-grandson of Roger Sherman, a signer of the Declaration of Independence, and great-great-grandson of President Clap, of Yale. His father was a United States senator and governor of Connecticut. Judge Baldwin graduated from Yale 1861, and from the Harvard Law School 1863. Settling in New Haven he rapidly acquired a large general practice, in

which he continued until 1893. Since 1872 he has held a professorship in the Yale Law School, and since 1893 he has been an associate justice of the Connecticut supreme court of errors. As a legal writer he has a wide reputation in the United States and abroad, through his contributions to leading law journals. He is the author of *Digest of Connecticut Reports* (2 vols. 1871–82; revision 2 vols, 1900); *Illustrated Cases on Railroad Law;* and *Modern Political Institutions* (1899).

BALDWIN, Theodore A., American military officer: b. New Jersey, 1839, Dec. 21. He entered the army as a private, 1862, May 3, and served in that grade and as quartermaster-sergeant in the 19th U. S. Infantry till 1865, May 31, when he became first lieutenant. He was promoted captain 1867, July 23; major, 7th Cavalry, 1887, Oct. 5; lieutenant-colonel, 10th Cavalry, 1896, Dec. 11; and colonel, 7th Cavalry, 1899, May 6. From 1898, Oct. 6, till 1899, Jan. 31, he served as a brigadier-general of volunteers.

BALDWIN, Theron, d.d.: educator: 1801, July 21—1870, Apr. 10; b. Goshen, Conn. He graduated at Yale College 1827, studied theology in Yale Divinity School, and went West as a Congl. home-missionary. He was for two years pastor at Vandalia, Ill.; was appointed Congl. home-missionary agent for the state; and entered with zeal into providing educational facilities. He procured the charter for Illinois College at Jacksonville, and founded the Monticello non-sectarian female college (Godfrey, Ill.), opened 1838, of which he was principal for five years. For 27 years as sec. of the soc. for promoting collegiate and theological education, Dr. B. did a work not surpassed by any other man in providing the higher-educational facilities for the then new West. The latter part of his life was passed in Orange, New Jersey.

BALE, n. *bāl* [P. *balle;* Sw. *bal;* It. *balla,* a pack of goods: Dut. *baal,* a bag]: a bundle or package of goods. Bale, v., to form into bales. Baling, imp. *bāl'ĭng.* Bled, pp. *bāld.*

BALE, v. *bāl* [Sw. *balja;* Dan. *balle;* Dut. *baalien,* to empty out water with a pail: *baile,* a tub]: to free from water by lifting it out in small quantities at a time, by means of a ladle or scoop, as from a boat. Ba'ling, imp. N. the act of freeing from water, as a boat. Baled, pp. *bāld.*

BALE, n. sorrow; evil: see under Baleful.

BALE, *bāl,* John, Bishop of Ossory, in Ireland: 1495, Nov.—1563; b. at Cove, Suffolk, Eng. He was educated as a Carmelite monk, turned Protestant, renounced his monastic vows, and married. He was saved from the active hostility of the clergy only by the powerful protection of Thomas Cromwell. He wrote a number of moralities or scriptural plays, in which he attacked the Roman party with much more vigor than decorum. On the downfall

of his patron he fled to Germany, but was recalled by Edward VI., and successively presented to the living of Bishopstoke, in Hampshire, and the bishopric of Ossory. In Ossory he made himself so obnoxious to the Rom. Catholics by his zeal in the Protestant cause, that on news of the death of Edward, his house was attacked, and he escaped from the country with great difficulty. On the accession of Elizabeth he returned to England, and was made a prebendary of the Canterbury cathedral. B. had great learning, but his controversial works are marred by a coarseness and bitterness that enraged his antagonists, and earned for himself the name of the 'bilious Bale.' A few of his plays are printed in Dodsley's 'Old Plays' (last ed., that by W. C. Nazlitt, 15 vols., 1874–76); the best *Kynge Johan*, was printed by the Camden Soc., 1838. His most valuable work was a kind of history of English literature, *Illustrium Majoris Britanniæ Scriptorum Summarium*, pub. 1548.

BÂLE: see Basel.

BALEARIC, a. *băl-ė-ăr'ĭk* [L. *balĕārēs*—from Gr. *ballein*, to throw—the inhabitants being good slingers]: of or relating to Majorca and Minorca, islands in the Mediterranean Sea.

BALEARIC CRANE, n. *băl-ė-ăr'ĭk krān:* the Crowned Crane, *Balearica pavonina*, found in the Balearic Islands and in n. Africa. Its occiput is ornamented with a tuft of yellowish filaments or feathers tipped with blackish hairs. Its voice is like the sound of a trumpet.

BALEARIC ISLES, *băl'e-ăr'ĭk:* group of five islands—Mallorca (Majorca), Minorca, Iviza, Formentera, Cabrera—off the coast of Valencia; lat. 38° 4′—40° 5′ n., long. 1°—5° e. They at one time formed the kingdom of Mallorca, united, 1289, with the crown of Aragon. They now form a Spanish province; 1,753 sq. m. The soil generally is good. Vines, olives, and other fruit-trees are cultivated abundantly: but corn has to be imported. The coasts are precipitous, with some excellent harbors—Port Mahon, in Minorca, being one of the finest in Europe. The Phœnicians visited the Balearic Isles at a very early date, and they were followed by the Greeks. The name was said to be derived from the Greek *ballein*, to throw, because of the expertness of the natives in using the sling, to which they were trained from infancy. Later, the Balearic Isles became subject to Carthage; but after a short period of freedom, during which their inhabitants became pirates, were annexed to the Roman empire by Metellus (Balearicus), B.C. 123, since which their history is involved in that of the peninsula. See Spain. Pop. (1900) 311,649.

BALECTION, a. *ba-lĕk'shŭn*, or Bolec'tion, *bŏ-* [etymology not obvious]: projecting. Balection moldings, n., in *arch.*, projecting moldings, situated around the panels of a framing.

BALEEN, n. *bă-lēn'* [L. *balæna*, a whale]: the horny

plates which occupy the palate of the true or whalebone whales; whalebone.

BALEFUL, a. *bāl'fŭl* [AS. *bealo*, torment: Icel. *bōl*, calamity]: mischievous; malignant; destructive; sorrowful; poisonous. BALE'FULLY, ad. *-lĭ*. BALE'FULNESS, n. the state or quality of being baleful. BALE, n. *bāl*, n. in *OE.*, grief; trouble; sorrow; poison. BALE-FIRES, fires warning of misfortune; beacons. See BEACON.

BALFE, *bălf*, MICHAEL WILLIAM: 1808, May 15—1870, Oct. 20; b. Dublin: English composer of operas, etc. When only seven years old, he played publicly one of Viotti's concertos for the violin. At nine, he wrote the ballad entitled *The Lover's Mistake*, which achieved popularity through the singing of Madam Vestris. At sixteen, he made his début in London, at the Drury Lane Theatre, as conductor of the orchestra. In 1825, going to Italy, he studied counterpoint under Frederici at Rome, and singing under Felippo Galli at Milan, and composed music for the ballet *La Peyrouse*, performed at the Theatre La Scala, Milan. In 1827, he returned to the stage, and sang in the Italian opera at Paris, where, with Malibran and Sontag, he gained great applause. Returning to Italy, he composed in rapid succession the operas—*I Rivali* (1829), *Un Avvertimento* (1830), *Enrico IV.* (1831), *Siege of Rochelle* (1836), *Maid of Artois* (1836), *Joan of Arc* (1837), *Falstaff* (1838), *Keolanthe* (1841), *The Bohemian Girl* (1843), *Les Quatre Fils Aymon* (1844), *The Bondman* (1846), *The Maid of Honor* (1847), *The Sicilian Bride* (1852), *The Rose of Castile* (1857), *Blanche de Nevers* (1860), *The Puritan's Daughter* (1861), *The Armorer of Nantes* (1863), and others. *Il Talismano* first saw the light 1874, June, nearly four years after B.'s death; it is perhaps his greatest work. Of the others named, *The Bohemian Girl*, and *The Rose of Castile* have been most permanently successful. Though B. may be deemed not very original, he had thorough knowledge of effect and command of orchestral resources; and his compositions are distinguished by fluency, facility, and melodic power. See Kenney's *Memoir of Balfe* (1875) and Barrett's *Balfe: His Life and Work* (1882).

BALFOUR, *băl'fôr* or *băl'fur*, ARTHUR JAMES, LL.D.: chief sec. for Ireland: b. England, 1848: nephew of the Marquis of Salisbury. He was educated at Eton and Trinity College, Cambridge; was member of parliament for Hertford 1874–85; private sec. to his uncle while foreign minister and delegate to the Berlin Congress 1878–80; elected to parliament for E. Manchester 1885–6; appointed sec. for Scotland 1886, July; and after serving in that office a few months became chief sec. to the lord-lieut. of Ireland, succeeding Sir Michael Hicks-Beach. He was pres. of the local govt. board 1885–6; pres. of the royal commission on gold and silver currency 1886; was elected lord rector of St. Andrews Univ. 1887; and received his degree from Edinburgh Univ. In 1886 he introduced in parliament the celebrated 'Crimes Act,' and since its adop-

tion he has applied himself to the enforcement of its provisions with great energy. 1890, Mar. 24, he introduced in parliament a bill for the purchase of land in Ireland. He was first Lord of the Treasury 1891–92, 1895; succeeded the Marquis of Salisbury as Prime Minister, 1902, July 12. He resigned with his cabinet on 1905, Dec. 4, and on 1906, Feb. 27, was elected to Parliament from London. In 1879 he published *A Defense of Philosophic Doubt;* in 1893 a volume of *Essays and Addresses;* in 1895 *The Foundations of Belief, being Notes Introductory to the Study of Theology,* and *Economic Notes on Insular Free Trade* (1903).

BALFOUR, Right Hon. Gerald William: English statesman: b. 1853. He was educated at Eton and Trinity College, Cambridge, entered Parliament in 1885, and was chief secretary for Ireland 1895–1900. In this capacity it fell to him to pilot the important Irish Local Government Bill of 1898 through the House of Commons. He was president of the board of trade 1900–5; and since 1905 has been president of the local government board.

BALFOUR, Isaac Bayley: Scottish botanist: b. Edinburgh, 1853, March 31. He was professor of botany in the Univ. of Glasgow 1879–84, at Oxford Univ. 1884–88, and since 1888 at the Univ. of Edinburgh. He explored the island of Socotra in 1880, in behalf of the British Association and of the Royal Society of Edinburgh. He is King's botanist in Scotland and keeper of the Royal Botanic Garden in Edinburgh.

BALFOUR, James: Canadian architect: b. Hamilton, Ont., 1852. He acquired his education in Canada and Edinburgh and began the practice of his profession in his native city. Among notable buildings of his designing are the Boys' Home and City Hall, in Hamilton; Alma Ladies' College, St. Thomas; and the Museum of Art, Detroit, Mich.

BALFOUR, Sir James: d. 1583: son of Sir Michael B. of Pittendreich and Montquhany, Scotland. In early life he was implicated in the conspiracy against Card. Beaton, and 1547 was taken prisoner to France in company with John Knox. He returned 1549, changed his religion, and began receiving unusual honors and emoluments from the queen and court. Gaining the confidence of Bothwell, he joined the conspiracy against Darnley, drew up the mutual bond of support of the conspirators, and was accused as an accomplice in Darnley's murder, but never tried. In 1567 he was appointed gov. of Edinburgh Castle, and after various deeds of treachery toward Bothwell and the queen, surrendered the castle to Murray on conditions of personal aggrandizement. He espoused the cause of the regency, and was rewarded by being made a privy councilor, commendator of the priory of Pittenweem, and lord pres. of the court of session. He fled to France several times and was instrumental in procuring the death of Morton who had befriended him while regent 1580. He published *Practices of Scots Law.*

BALFRUSH, *bâl-frūsh'* (or more correctly BARFURUSH, *bâr-fŭr-ūsh'*, 'mart of burdens'): important commercial town in the Persian province of Mazanderan; on the river Bahbul, about 12 m. from its mouth in the Caspian Sea. The river is here about 50 yds. broad, but shallow, is crossed by a fine stone bridge of eight arches. It is not navigated, all goods being landed at the port of Meshhedi-Ser, on the Caspian, whence they are conveyed to B. by an excellent road. To the s. of the town there is an artificial island, about half a mile in circumference, on which the palace of Shah Abbas formerly stood. B. has excellent bazaars, and several Mohammedan colleges. Flax and cotton are much cultivated in the vicinity. Pop. variously estimated, 50,000 to 200,000, the latter by Fraser, who visited it 1822, since which time it has been greatly depopulated by plague and cholera.

BALI, *bâ'lē*: island e. of Java; 2,300 sq. m. B. is volcanic—its highest mountain, 12,379 ft., having been an active volcano as late as 1843. Agriculture is the chief employment. The inhabitants grow rice, indigo, cotton, fruits, maize, and edible roots, and have buffaloes and cattle. Fish is plentiful. Coffee culture is extending; and of late its export from Bolélêng, the trading capital, reached upwards of 20,000 cwts., valued at $300,000. B. is well situated for trade. The Balinese are a superior race, and speak a language related to Javan. They excel as sculptors, and in working gold, silver, and iron. Their religion is Brahmanism. Under the Dutch, the eight kingdoms are governed by native rulers. Chinese and a few Europeans are the chief traders. Pop. (1900) about 431,696.

BALIOL, *băl'ĭ-ol* or *băl'yol*, JOHN, Lord of Galloway, afterwards King of Scotland: 1259–1314: on the death of the Princess Margaret, 1290, became a competitor for the crown of Scotland. As the grandson of the eldest dau. of David, Earl of Huntingdon, brother of William the Lion, his claim was pronounced superior to that of the other principal competitor, Robert Bruce, Lord of Annandale, son of the second daughter. The arbiter on the occasion was Edward I. of England, who found this a fit opportunity for asserting his claim as lord-paramount of Scotland. That claim was acknowledged by the Scottish estates in submitting the contest to his decision; and, consistently with this ignominious submission, B., before and after receiving the crown (1292, Nov. 30) swore fealty to Edward as his feudal superior. Abject as he had shown himself, the indignities which he experienced at length roused him to assert his right as king, and, 1295, he took upon him, by the advice of his nobles, to make alliance with France, then at war with England. This act of revolt was followed by speedy chastisement. Edward invaded Scotland with a large force; defeated the Scottish troops; took B. prisoner, and compelled him, after performing a humiliating penance, formally to surrender his crown, 1296, July 2. B. was confined for three years in the Tower, with allowance of a limited freedom, and something of royal state. At the end of that

time, he was permitted to retire to his patrimonial estates in Normandy, where he died a short time after the battle of Bannockburn. The estimate by his subjects of this prince was indicated by the surname 'Toom Tabard,' or Empty Jacket.

BALIOL, EDWARD, King of Scotland: son of John: d. 1363: transiently conspicuous by his daring and successful invasion of Scotland, then under the regency of Randolph, Earl of Moray, 1332. Accompanied by some English noblemen bent on recovering their forfeited estates in Scotland, he landed with a few hundred followers at Kinghorn, Fifeshire; defeated the Earl of Fife; pushed boldly into the country; and on Dupplin Moor, Perthshire, routed with immense slaughter an army upwards of ten times as numerous as his own. On Sep. 24, seven weeks from the date of his landing, he was crowned king of Scotland at Scone. Only about three months afterwards, he was surprised in his camp at Annan, and nearly lost his life as well as his crown. His subsequent career is the very reverse of what might have been anticipated from so adventurous a beginning, being marked only by weakness, servility, and misfortune. He died at Doncaster, and with him ended the house of Baliol.

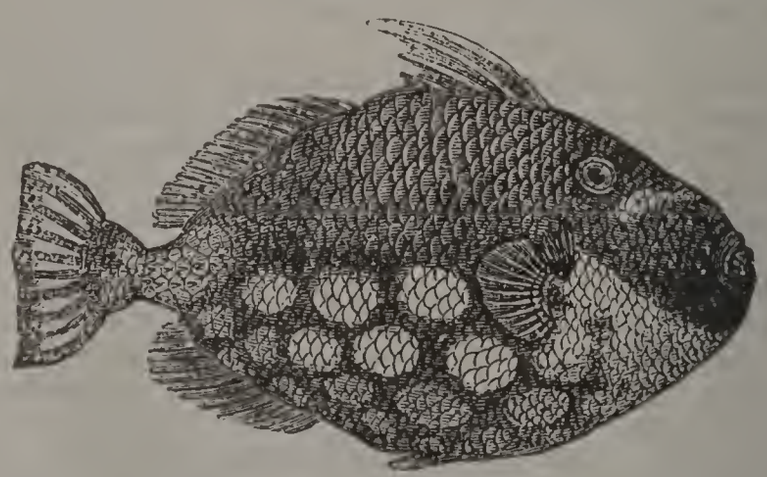
BALIOL COLLEGE: see BALLIOL COLLEGE.

BALISAUR, n. *băl'ĭ sawr* [appar. fr. Gr. *balios*, spotted; *sauros*, a lizard]: an Indian mammal (*Mydaus collaris*), allied to the badger.

BALISTA: see BALLISTA.

BALISTER, or BALLISTER, n. *băl'ĭs-tĕr:* see BALUSTER.

BALISTES. *ba-lĭs'tēz*, or TRIGGER FISH: genus of osseous fishes of the order *Plectognathi* (q.v.) of Cuvier; the type of a family, *Balistidæ*, the species of which are inhabitants



Balistes conspicillum.

mostly of tropical and subtropical seas, frequenting rocky costs and coral-reefs. Their colors are generally brilliant. The body is remarkably compressed. The ossification of the skeleton, as in the other Plectognathi, is very incomplete, and the external covering of the body resembles that of the Ganoid (q.v.) fishes, consisting, in some of the

genera, of large rhomboidal scales, disposed in regular rows, and not overlapping; in others, of very small rough scales, with stiff bristles, as densely crowded as the pile of velvet. But the most interesting thing in connection with these fishes is the provision for fixing the first dorsal spine in an erect position, or lowering it at the will of the animal. The spine is articulated 'by ring and bolt to the broad interneural osseous plate.' 'When the spine is raised, a depression at the back part of its base receives a corresponding projection from the contiguous base of the second ray, which fixes it like the hammer of a gun-lock at full cock, and it cannot be let down until the small spine has been depressed, as by pulling the trigger; it is then received into a groove on the supporting plate, and offers no impediment to the progress of the fish through the water. This trigger-like fixing of the spine takes place also in the dead fish; and when a B. is removed from the bottle for examination, it is generally necessary to release the spine by pressing on the small trigger-ray.' The spine is roughened with enamel grains, whence the name File-fish. The flesh of these fishes is generally regarded as unwholesome.

BALISTRARIA: see BALLISTRARIA.

BALIZE, n. *ba-līz'* [Fr. *balise*, a sea-mark, a buoy—from L. *palus*, a pale]: a pole raised on a bank to constitute a sea-beacon; a sea-mark.

BALIZE, BELIZE, *ba-lēz'*, or BRITISH HONDURAS: British colony on the Bay of Honduras, in the Caribbean sea; n. lat. from 16° 45′ to 18° 30′, w. long. from 88° 10′ to 89°; 13,500 sq. m. It is the s.e. part of the peninsula of Yucatan, which here divides the Caribbean Sea from the Gulf of Mexico. The Balize river traverses the middle of the country for about 200 m., and the Rio Hondo and Siboon form respectively the n.w. and s.e. boundaries. The early British settlers were frequently attacked by the Spaniards; but since 1798, when they repulsed a fleet and land-force of 2,000 men, their occupation has been formally acquiesced in. Since 1862, B. has ranked as a British colony, and has had a governor and local magistrates. The country has a general tropical fertility, but its chief exports are mahogany, sugar, coffee, cotton, india-rubber, and logwood with other dye-stuffs. Pop. (1891) 31,471, of which abt. 500 white.

BALIZE, the cap., at the mouth of the B. river, is a depot for British goods for Central America: pop. varying from 8,000 to 15,000.

BALK, v. *bawk* [Icel. *balkr*, a division between stalls: Sw. *balka*, to partition off; *balk*, a hewn beam: Ger. *balken*, a beam, separation]: to separate by beams; to partition off; to pass over in plowing; to cause another to miss the object of his expectation; to disappoint; to frustrate: N. a slip or ridge of land left unplowed; a beam; sudden disappointment. BALK'ING, imp. BALKED, pp. *bawkt*. BALK'INGLY, ad. BALKS, n. the rafters BALK'ER, n. one

who signals to the fishermen the course of the herring-shoals.—SYN. of 'balk, v.': to disappoint; baffle; defeat; disconcert; confound; frustrate; discompose; foil.

BALKAN, *bâl-kân'*, or HÆMUS, *hē'mŭs:* eastern branch of the mountain-system which comprehends the ranges of Montenegro, Herzegovina, and the Dinaric Alps. It extends from the plain of Sophia to Cape Emineh, on the Black sea, and forms the s. boundary of the basin of the Danube, from 1878 till 1885 dividing Bulgaria from eastern Roumelia. Its highest summit, Tchat-al-dagh, is 7,876 ft. above sea-level; but the general height of the range is abt. 4,000 ft. Towards the Black Sea, the mountains become lower and diversified with wooded slopes. They send several offshoots n. and s., and are of great strategical importance in the defense by Roumelia. The chief route across them is that of Trajan's Gate, which connects Constantinople with the w. of Europe. The attempt by the Turks to regain possession of the Shipka Pass in the Balkans was one of the fiercest contests of the war of 1877.

BALKAN' PENINSULA: peninsula in s.e. Europe, bounded e. and w. by the Archipelago and the Adriatic, n. by the Save and the Danube: though Greece forms the s. extremity of the peninsula, it is not reckoned as one of the Balkan states. In general, the B. P. and the Balkan states cover the area of European Turkey, with the non-Turkish states now or formerly under Turkish rule, except Roumania and Greece.

The B. P. is peopled by very diverse races. The oldest inhabitants, the Illyrians, are represented by the Albanians; there is a Greek element; the Rumans or Roumanians are descendants of the anc. Dacians; the Slavonians are a large and important element. Of the Turanian element, the Bulgars are now thoroughly Slavonized. Finally, there are Ottoman Turks. Other races form less considerable contingents of the population.

According to Reclus, the present territory of the peninsula may be divided into four ethnological zones: (1) Crete and the islands of the Archipelago, the seaboard of the Ægean, the e. slope of Pindus and of Olympus, are peopled by Greeks; (2) the space between the Adriatic and Pindus is the country of the Albanians (Skipetar); (3) on the n.w., the region of the Illyrian Alps is occupied by Slavs, known as Serbs, Croats, Bosnians, Herzegovinans, and Chernagorans (Montenegrins); (4) the two slopes of the Balkans proper, the Despoto-Dagh, and the plains of e. Turkey belong to the Bulgarians—a Slavonized Turanian people, now practically Slavs. The Turks themselves are scattered here and there in more or less considerable groups, chiefly round the cities and strongholds; but the only extensive tract of country of which they, ethnologically speaking, are possessors, is the s.e. angle of the peninsula. In 1885 the statistical bureau in Belgrade reckoned that in European Turkey (*without* Roumania, Servia, or Montenegro) there were 1,362,000 Turks—not pure Osmanli, but largely de-

TURKEY IN EUROPE, SERVIA, ROUMANIA, BULGARIA, GREECE AND MONTENEGRO.
SCALE OF STATUTE MILES.
0 50 100 150 200
Copyright, 1899, by Rand, McNally & Co.
Longitude East from Greenwich.
20°
25°
30°
45°
40°
RUSSIA
AUSTRIA-HUNGARY
ROUMANIA
SERVIA
BULGARIA
MONTENEGRO
TURKEY
GREECE
EASTERN ROUMELIA
BLACK SEA
ADRIATIC SEA
IONIAN SEA
MEDITERRANEAN SEA
ÆGEAN SEA
SEA OF MARMORA
TRANSYLVANIAN ALPS
BALKAN MOUNTAINS
BUKOWINA
MOLDAVIA
WALACHIA
BELGRADE
BUKHAREST
SOFIA
PHILIPPOPOLIS
CONSTANTINOPLE
ATHENS
CETIGNE
Szigeth
Botushany
Jassy
Piatra
Roman
Bakau
Bistritz
Maros
Karlsburg
Kronstadt
Kishenev
Tiraspol
Odessa
Ananiev
Hushi
Leova
Berlat
Kagul
Akerman
Bolgrad
Ismail
Galatz
Braïlov
Tultcha
Mouths of the Danube
Essegg
Brod
N. Becskerek
Pancsova
Semlin
Svornik
Valievo
Serajevo
Krajova
Slatina
Ploesci
Hirsova
Mangidie
Kustendje
Mangalia
Giurgevo
Rustchuk
Silistria
Rasgrad
Shumla
C. Kaliakra
Varna
Nicopoli
Plevna
Sistova
Nish
Kruschevat
Kragujevat
Novibazar
Lovtcha
Tirnova
Leskovatz
Selimno
Misivri
Burghas
Ragusa
Cattaro
Antivari
Scutari
Pristina
Prisrend
Uskub
Esk Zagra
Tatar Bazardjik
Tirnova
Midia
Kirk Kilisseh
Adrianople
Istib
Durazzo
Elbassan
Philippo
Doiran
Demir Hissar
Gumurjina
Demotika
Seres
Monastir
Kavalla
Feredjik
Rodosto
Brindisi
Bera
Kastoria
Salonika
Thasos
Enos
Gallipoli
Avlona
Veria
Mt. Olympus
Samothraki
Imbros
Brusa
Delvino
Janina
Lemnos
Corfu
Parga
Trikhala
Larissa
Volo
Mitylene
Pano
Skopelos
Skyro
Euboea
Santa Maura
Kephalonia
Chalcis
Negropont
Scios
Smyrna
Patras
Zante
Argos
Andros
Samos
Gulf of Arcadia
Tripolitza
Nauplia
Corinth
Thermia
Nicaria
Tinos
Mykonos
Sparta
Serpho
Paros
Siphanto
Nios
Amorgus
Milo
Polykandro
Astropalia
Gallo
C. Matapan
C. Malia
Cerigo
Santorin
Anaphi
Rhodes
Mendere
Dardanelles
Danube
Strait of Otranto
Otranto
Bosporus
Killa
Galata
Scutari
R., McN. & Co., Engr's. Chi.

scended from renegade Greeks and Bulgarians; 1,137,000 Greeks; 1,011,000 Albanians, 200,000 Walachians; 1,388,000 Serbs; 2,877,000 Bulgarians, of whom 860,000 are Mohammedans; 100,000 Armenians; 70,000 Jews; 104,000 Gypsies; and 144,000 Circassian immigrants.

The following table is compiled from official returns:

Political Divisions.	Area: sq. m.	Pop.
Immediate possessions:		
Europe	65,752	6,086,300
Asia	650,394	17,545,300
Africa	398,900	1,300,000
	1,115,046	24,931,600
Bulgaria (including Eastern Roumelia) autonomous	37,860	3,733,189
Bosnia, Herzegovina, and Novibazar—under Austria-Hungary	23,570	1,591,036
Crete	3,326	309,253
Samos—tributary principality	180	54,834
Egypt	400,000	9,821,045
	464,936	15,509,357
Total	1,579,982	40,440,957

BALKASH, *bâl-kâsh'* or Tengiz, *ten'gēz* (Tenghíz or Tenguíz): lake near the e. borders of Russian Central Asia; lat. 45° to 47° n., long. 75° to 79° e. Its length is stated at about 300 m., and its greatest breadth 75 m. Its principal feeder is the river Ili. It has no outlet.

BALKH, *bâlk:* district of Afghan Turkestan; the most northerly province of Afghanistan; corresponding to ancient Bactria (q.v.): between lat. 35° and 37° n., long. 64° and 69° e.; bounded n. by the river Oxus, e. by Badakshan, s. by the Hindu-Kush, and w. by the Desert; length 250 m., breadth 120 m. Offsets of the Hindu-Kush traverse it in a n.w. direction, and slope down to the low steppes of Bokhara. Its situation was important during the overland commerce between India and eastern Europe before the sea-route by the Cape of Good Hope was followed. The soil has the general characteristics of a desert land; only a few parts are made fertile by artificial irrigation; and such are the vicissitudes of climate, that where grapes and apricots ripen in summer, and the mulberry-tree permits the cultivation of silk, in winter the frost is intense, and the snow lies deep on the ground. The natives are Usbegs (q.v.), whose character differs in different districts. B. was for some time subject to the Khan of Bokhara. Pop. not known, estimated abt. 1,000,000.

Balkh, long the chief town, 23 m. from the Amu, is situated where the Rudi Haaj is distributed in numerous canals. It is surrounded by a mud wall; but though bearing the imposing title of 'mother of cities,' it has not in recent times had any of the grandeur of ancient Bactra, on the site of which it is built. It was twice destroyed by Genghis Khan and Timur. A terrible outbreak of cholera, 1877, caused the cap. of Afghan Turkestan to be transferred to Mazar, w. of B.; since when, B. is an insignificant village, though its position on the boundary gave it importance in the British-Afghan war.

West of Balkh are the petty Usbeg states of Maimana,

Andkhui, Akcha, and Shabir-kan, all absolutely ruled by Kabul, except Andkhui; east of B., between it and Badakshan proper, are the towns and khanates of Kunduz and Khulm. All these Usbeg khanates are in the basin of the Amu Darya, and together with Wakhan e. of Badakshan, constitute Afghan Turkestan.

BALL, n. *bawl* [F. *balle*, a ball: It. *palla*, a globe: *balla*, a bale: Sp. *bala*: L. *pila*, a ball: Icel. *böllr*, a ball]: a round body; a globe or sphere; especially one of convenient size for the hands, as a baseball or tennis-ball; a spherical projectile, as a round bullet or a cannon-ball; a round ink-dauber, formerly used by printers; a roundish surface or part, as the ball of one's thumb: V. to form into a ball; to cling together in a ball or mass. BAL'LING, imp. BALLED, pp. *bawld*. BAL'LER, n. *bawl'er*, one who makes balls, as of thread. BALLET, n. a little ball, especially as a heraldic bearing on a coat of arms. BALL AND SOCKET, a construction forming a joint that permits movement in all directions up to a certain limit, occurring in the human hip-joint. It is in common use in mechanics, as in shaft-hangers. A familiar instance is the sunshade of a child's carriage, the handle ending in a ball, which rests in a socket on the carriage, while a clamp permits fastening the shade in a great variety of positions. BALL BEARING, a bearing, as for a shaft or axle, in which one or more hollow rings are filled with small steel balls, to reduce the friction. See BEARING. BALL-CARTRIDGE, n. a cartridge containing a ball or spherical bullet. BALL-CLAY, n. clay moistened and worked into spherical form, for use in making fine pottery, or other modeling. BALL-COCK., n. a ball-valve having a nozzle. BALLS, HOLLOW. See BALLS. Ball-Flower, see in vocabulary place. BALL OF THE EYE, the eye proper; eyeball. BALL OF THE FOOT, the rounded part of the sole of the foot, back of the toes. BALL-SCREW, n. a long screw for inserting in a gun to extract a leaden bullet. BALL-VALVE, n. a valve in which an aperture, as of a pipe, is closed by a ball. BALL VEIN, a vein of ore in which iron occurs in nodules or balls. THREE BALLS, the sign of a pawn-broker.

BALL, n. *bawl* [OF. *bal*, a dance, a ball—from *baler*, to move or stir: mid. L. *ballārĕ*, to move backwards and forwards: Gr. *ballīzō*, I leap or bound—from *ballō*, I throw: It. *ballārĕ*, to shake or jog]: an entertainment of dancing.

BALL, SIR ROBERT STAWELL, distinguished English astronomer: b. Dublin, 1840, July 1. In 1865 he was appointed Lord Rosse's astronomer at Parsonstown. He has held many posts in connection with astronomy and mathematics, including those of professor of applied mathematics and mechanism at the Royal College of Science for Ireland; Andrews professor of astronomy in the University of Dublin; astronomer-royal of Ireland; and Lowndean professor of astronomy and geometry in the University of Cambridge. The Royal Society elected him a Fellow in 1873, and in 1886 he was knighted. His

numerous works include *The Story of the Heavens* (1885); *Time and Tide* (1889); *Star-Land* (1889); *The Story of the Sun* (1893); *Great Astronomers* (1895); *A Treatise on the Theory of Screws* (1900); *The Earth's Beginning* (1901); *Popular Guide to the Heavens* (1905).

BALL, Thomas: sculptor: b. Charlestown, Mass., 1819, June 3. In his early years he sang in public in oratorios. He began his art career in Boston as a portrait painter; then took up sculpture, among his works being a miniature bust of Jenny Lind, a statue of Webster, and busts of other celebrities. He lived abroad for many years, producing imaginative pieces, such as *Truth, Pandora,* and the *Shipwrecked Sailor-boy.* On his return to America, he settled in Boston, where he gave much of his time to portrait busts and statuettes, besides modelling an equestrian statue of Washington for the city of Boston. Among his later works are his group *Emancipation,* (the original in Washington, a replica in Boston), *Eve,* Forrest as *Coriolanus,* statues of John A. Andrews, Charles Sumner, Josiah Quincy, Daniel Webster—the latter placed at a cost of $60,000, in Central Park, New York.

BALLAD, n. *băl'lăd* [F. *ballade,* a song: It. *ballata,* a song sung in dancing: Prov. *balada* (see BALL 2)]: a simple popular song containing a tale. BALLADRY, n. *băl'lăd-rĭ,* the subject or style of ballads. BALLATRY, n. *băl'ăt-rĭ,* in *OE.,* a song; a jig. BALLAD-SINGER, one who sings ballads. BALLAD-MONGER, a contemptuous epithet for a composer of ballads. BALLAD-THEORY, a theory which accounts in the prevalence of belief in certain unsupported historical narratives by assuming that they may have been derived from old and veracious ballads.

BALLAD: originally a dance-song; but the term has passed through many transformations of meaning, and is now somewhat vaguely applied to a simple, popular, versified narrative. The confusion in the former use of the term is increased by the fact that poems of exactly the same kind were styled sometimes romances, sometimes ballads, sometimes epic or lyrico-epic, or poetic narratives; so that it was left to the caprice of the poet which of these generic names he would give to his production. As early as the 12th c., the Italians gave the title of B. to short, purely lyrical pieces, allied to the sonnet or still more to the madrigal, and which usually had love-sorrows for their subject. Dante has such *ballate.* Akin to these are those French ballads which Molière set himself against, and which fell into disuse. The earliest ballads, as the word is now understood, are those of England and of Scotland, beginning about the 14th c. They so far resemble the Spanish Romances, that the subject in both is narrative and handled lyrically. See LYRIC. The Spanish romance, however, has more of the lyrical element, and is of a gayer cast, reflecting the southern character of the people; while the northern B. took a more earnest, sombre shape, especially among the Danes; though in the north also there are ballads of a cheerful and sportive tone.

As far as subject is concerned, the B. is a species of minor Epic (q. v.). The name is generally applied to a versified narrative, in a simple, popular, and often rude style, of some valorous exploit, or some tragic or touching story. Ballads are adapted to be sung or accompanied by an instrument. They are comparatively short, the story being circumscribed, and not embracing a combination of events, as the plan of the grand epic does. There can be little doubt that the B. has been the first form of poetry among all nations; and that the earlier epics or heroic poems of the higher kind, such as the Spanish Cid and the German Nibelungen, grew out of such simple beginnings. Of the popular B., the borderland of Scotland and England, is allowed to have produced the best examples—as *Chevy Chase, Fair Helen of Kirkconnel Lee,* and many others. As a B. of modern composition may be instanced Goldsmith's *Edwin and Angelina.*

Many of the old popular songs of the Germanic nations are simply narratives of epic events and incidents in which the feelings of the composer manifest themselves. But the name of B. was not then in use, and such poetical narratives were called simply songs, or more specifically perhaps *lays* (Ger. *lieder*). It was not till the last half of the 18th c. that the foreign name was transferred to them.

The B. in recent times has been cultivated chiefly by the Germans, and in their hands has assumed a more artificial development. Bürger may be said to be the creator of the modern B. His *Leonore* has become at once classical and popular. Bürger, Schiller, Goethe, Uhland, and Heine are the greatest German names in this department of composition. Following the practice of these writers, it has become common to confine the name B. to an epic narrative with something fabulous and supernatural in the background. In this sense, Goethe's *Erlkönig* is a ballad; and Coleridge's *Ancient Mariner* is perhaps the best exemplification in English. Of the ancient English and Scottish ballads there are collections by Scott, Aytoun, and others; the best being Child's *English and Scottish Popular Ballads.*

BAL'LANTINE, *bâl'-lân-tīn,* JAMES, Scottish artist and poet: b. Edinburgh, 1808, June 11; d. 1877, Dec. 18. He was brought up as a house-painter, but afterward learned drawing under Sir William Allen and was one of the first to revive the art of glass-painting. He was commissioned to execute the stained-glass windows for the House of Lords, and in 1845 published a treatise on glass-staining, which was translated into German. Two prose volumes, *The Gaberlunzie's Wallet* (1843), and *The Miller of Deanhaugh* (1845), contain some of his best-known songs and ballads. He was author of *Poems* (1856 and 1865); *One Hundred Songs with Music* (1865); *Life of David Boberts, R. A.* (1866) and *Lilias Lee* (1871).

BALLANTINE, WILLIAM GAY, American educator: b. Washington, D. C., 1848, Dec. 7. He was graduated at Marietta College 1868, and at the Union Theological Sem-

inary 1872; spent a year in study in Leipsic; was attached to the American Palestine Exploring Expedition of 1873; professor of chemistry and natural science in Ripon College 1874–6; professor of Greek and Hebrew in the University of Indiana 1878–81; professor of Old Testament language and literature at Oberlin Theological Seminary 1881–91; and president of Oberlin College 1891–6. Dr. Ballantine was one of the editors of the *Bibliotheca Sacra* (1884–91).

BAL'LANTYNE, JAMES: Scottish printer: b. Kelso, 1772; d. Edinburgh, 1833. Successively a solicitor and a printer in his native town, at the suggestion of Sir Walter Scott he removed to Edinburgh, where the high perfection to which he had brought the art of printing, and his connection with Scott, whose works he printed, secured him a large trade. For many years he conducted the Edinburgh *Weekly Journal.* His firm was involved in the bankruptcy of Constable & Company, by which Scott's fortunes were wrecked, but Ballantyne was continued by the creditors' trustee in the literary management of the printing-house.

BALLANTYNE, JAMES ROBERT: Scottish Orientalist: b. Kelso, Scotland, 1813; d. 1864. After receiving an education at Hailey Tury College he was sent to India, where he was placed in charge of the Sanskrit College at Benares. On his return to England he was made librarian of the East India office. Among his writings are *The Practical Oriental Interpreter* (1843); *Catechism of Sanskrit Grammar; Synopsis of Science in Sanskrit and English, reconciled with the Truths to be found in the Nyaya Philosophy* (1856); *Christianity Contrasted with Hindu Philosophy* (1859).

BALLARAT, *băl-la-răt':* oldest of the *considerable* goldfields of Victoria, and the oldest but one of all the goldfields of the colony: about 100 m. w. by n. of Melbourne, with which it is connected by railway. It was first worked 1851, Sep.—the comparatively unimportant ground at Anderson's Creek, which dated from Aug. of the same year, having been the earliest result of the 'prospecting' which, a few months previously, had been stimulated by the newly discovered 'diggings' of New South Wales. Though B. was speedily rivalled by Mont Alexander and Bendigo, yet it has not lost its original pre-eminence. As its surface-digging became exhausted, mines were formed—some of them now as deep as average English coal-pits. There are several iron-foundries, breweries and distilleries, flour-mills, woolen-mills, and other factories. The surrounding district is also eminently suitable for farming and sheep-breeding. In addition to the line to Merlboune, Ballarat has railway connection with Geelong, Ararat, Maryborough, Castlemaine, etc. The town is well lighted with gas, abundantly supplied with water, and contains many handsome public edifices, among which may be mentioned the city hall, council-chamber, two town halls, a spacious hospital, an orphan asylum, a benevolent asylum, a lying-

in hospital and refuge, public baths, a jail, mechanics' institute (with 22,500 volumes), a free library (with 15,000 volumes), a theatre, and several other places of amusement, post-office, extensive railway premises, forty churches, two cathedrals, the palaces of the Anglican and Roman Catholic bishops, two colleges, four grammar and various other schools, a school of mines, many banks, numerous fine hotels, etc. B. (also spelt *Ballaarat*), or B. West and B. East, separated by a small creek, are separate municipalities. Pop. 46,137.

BALLAST, n. *băl'lăst* [Dut. *ballast*, ballast: AS. *bat*, a boat; *blaest*, load: Dan. *bag-lest*, the back load or worthless load]: any heavy substance placed at the bottom of a ship or boat to steady it; the load of sand, stones, etc., which a ship carries when there is no cargo; also bags of sand or the like to steady the car of a balloon, to be thrown out when it is desired to rise; broken stone, iron slag, etc., laid on the bed or permanent way of a railroad, to pack the ties and keep the earth underneath from washing away or being displaced in dust by the strong air-currents caused by passing trains; road metal, broken stone, clay, gravel, etc., as a top dressing for a roadway, to render it more solid and protect the loose earth. V. to load with ballast; to steady by supplying with a load. BAL'LASTAGE, n. port dues levied on a ship for the privilege of taking in ballast. BAL'LASTING, imp. BAL'LASTING, n. material for ballast, as a load of broken stone; also, the act of supplying with ballast. BAL'LASTED, pp. BALLAST-LIGHTER, n. a workman handling ballast for a vessel. BALLAST-LINE, n. the line on a ship's hull that is on a level with the surface of the water when the vessel is in ballast. BALLAST-MASTER, n. a port officer having charge of regulations for ballasting vessels.

BALLAST, in Navigation: heavy substance employed to give a vessel sufficient hold of the water, to insure her safe sailing with spread canvas, when her cargo and equipment lack weight for that purpose. The amount of B. required by a ship depends not only on her size and cargo, but also on her build; some forms of construction requiring more B. than others. It is not merely the *quantity* of B. which a skilful mariner has to consider; he is required also to take into account its *distribution*. If a heavy mass of B. be deposited within a small compass near the keel, it places the centre of gravity very low down; the ship may sail sluggishly, and is said to be 'stiff.' If the B. be massed too high up, the ship becomes 'crank,' and cannot carry much sail without danger.

The substances used as B. are various—chiefly iron, stone, gravel, sand, mud, and water. In pleasure yachts of recent construction, lead, run into a considerable length of the keel, is a favorite B. Iron is now superseding stone, gravel, and sand, in ships of any importance; and water-ballast is gradually being introduced in British collier-

ships of the Tyne, Wear, and Tees. Before the use of water-ballast, the collier-ships were ballasted, when empty, with material mostly dredged up from the bed of the Thames in and near Woolwich Reach. About 10,000 tons per annum were thus used. Returning to the Tyne, and not allowed to empty the B. in the river, they discharged it on the shore; thus making the vast mounds on the banks of the Tyne, which again have been useful as supplying ballast for the construction of railways. Water-ballast is employed in four different ways. *Bag water* B. is contained in water-proof bags laid on the floor of the vessel, and filled or emptied by means of a pump and a hose. *Bottom-water* B. is confined beneath a false bottom in the vessel. *Hold-water* B., first employed in screw-steamer colliers constructed by Scott Russell, is contained in a large receptacle, which may be filled with the cargo when the ship is not in B. *Tank-water* B. is contained in two fore-and-aft tanks, which can easily be filled and emptied.

BALLAST HEAVING: transferring ballast dredged from the beds of rivers, to the holds of ships empty of cargo, and discharging it again at some other port. As this has effect on the navigable channel, it is usually regulated by law.

BALLATER, *bâl'la-tėr:* village of Aberdeenshire, Scot.; on the banks of the Dee; 36 m. w.s.w. of Aberdeen. It is remarkable for the resort of numerous visitors to its chalybeate springs. Pop. (1881) 759. ; (1891) 983.

BALLATOON, n. *băl'la-tôn:* a heavy luggage boat employed in the transport of timber in Russia.

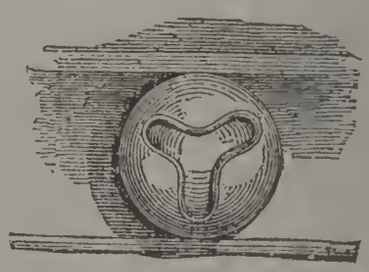
BALLENY ISLANDS, *bal'le-ne:* group of five small volcanic islands discovered in the Antarctic Ocean, 1839: lat. 66° 44′ s., long. 163° 11′ e.

BALLESTEROSITE, n. *bal-lĕs-tėr-ō'sīt* [after *Lopez Ballesteros*]: a mineral, the stanniferous variety of Pyrites. It contains tin and zinc; found in Galicia.

BALLET, n. *băl'lā* [F. *ballet,* a sort of dance: It. *ballo,* a dance; *ballata,* a dance, or song sung when dancing (see BALLAD)]· a kind of dance; a scena acted in dancing in a theatre, and associated with music; usually an interlude in theatrical performances, principally in operas. Properly, a B. is a theatrical exhibition of the art of dancing in its highest perfection, and must therefore, in general, comply with the rules of the drama as to its composition and form. The pantomimic sacrificial dances of antiquity, although they may be regarded as the source of Attic tragedy, are not to be considered as directly the origin of the ballet. The B., as known to us, undoubtedly originated in the service of the courts. We find it existing in Italy in the beginning of the 16th c., especially at the court of Turin, where it was enriched by the inventive genius of Count Aglio; and where the princes and princesses of the court themselves took part in it, in song and declamation as well as in dance; for the B. at first appeared in combination with the other theatrical arts, and completed the chaotic medley exhibited in these spectacles, at once mythological, allegorical, fantastic, warlike, and pastoral. From

these mingled elements the individual species of dramatic entertainments were gradually evolved in their distinct forms. Baltagerini, director of music to Catherine de Medici, was the first to introduce the B. into France, where it soon became such a favorite, that Louis XIII. danced in one of these ballets, and his example was followed by Louis XIV. in his youth. The latter made his last appearance on the stage, 1699, in the B. of *Flora*. Hitherto, the B. had always appeared in combination with the characteristic features of the opera, and even of comedy, as is evident from the works of Quinault and Molière, arranged by Lully. The art of dancing possessed then little dramatic expression, and still required to be introduced and explained by singing and recitation. In 1697, Antoine Houbart de la Motte undertook to reform the B., to which he imparted both dramatic action and the expression of passionate feeling. About this time, women first made their appearance in the B., as well as in plays and operas, till then performed exclusively by men. There is no mention of any female ballet-dancer of note before 1790. About the middle of the 18th c., Noverre separated the B. from the opera, gave it an independent dramatic form, and in his writings laid the foundation of an ingenious theory on the subject. The Mythological B., a relic of the magnificence of Versailles, came to an end during the Consulate, when it gave place to the newly invented Comic Ballets *Dansomanie*, *La Fille mal Gardée*, and the *Arlequinades*. Vincenzo Galeotti, in Copenhagen, carried out the ideas of Noverre so far as to subordinate the dance to purely dramatic principles, instead of giving it the first place as formerly; and thus he gave to his ballets the character of great rhythmical pantomimes. These splendid performances were kept up longest in the theatre of Milan, where the most lifelike and magnificent tableaux were exhibited in pantomime; and subjects were attempted far beyond the limits of the ballet. The story of *Hamlet* was turned into a B., and the subjects of several other tragedies were similarly treated. In general, the B. has now become unfaithful to its original design and its true artistic signification; and exhausts itself in the exhibition of mere feats of bodily agility, tasteless displays of artificial dexterity, distortions of the person almost to dislocation, and balancings of the figure in attitudes often indelicate. Consisting as it does more of external show than internal meaning, it contributes gradually to blunt the public taste for the enjoyment of the legitimate drama, which speaks more to the mind than to the eye.

BALL-FLOWER [named from its resemblance to a ball placed in a circular flower]: an ornament peculiar to the decorated style of Gothic architecture which prevailed in the 14th c. The B.-F. is supposed by some to be an imitation of a pomegranate, by others of a hawk's bell. Its form is shown in the illustration.



Ball flower.

BALLIOL COLLEGE, *băl'yol*, Oxford: founded between 1263 and '68 by John de Balliol, father of John Baliol, King of Scotland. The original foundation consisted of 16 poor scholars, and the revenue for their maintenance amounted for many years to only 8d. per week for each. In 1340, the establishment was enriched by benefactions from Sir William Penton and Sir Philip Somervyle, the latter of whom gave the college a new body of statutes. Its most important subsequent benefactors were Bell, Bp. of Worcester, 1566; Will Hammond, 1575; Peter Blundell's executors, 1615 and '76; Lady Periam, 1620; Warner, Bp. of Rochester, 1667; John Snell, 1677, and Mrs. Williams, 1830. The society consists of a master; 13 fellows, and 24 scholars. The number of members on the books is about 600. The master and fellows enjoy the privilege of electing their own visitor. John Wycliffe was master of this college, 1361; among its scholars have been John Evelyn, and Bradley the astronomer. The Snell Exhibitions for students of Glasgow Univ. attract annually to this college a few distinguished Scottish students.

BALLISMUS, n. *băl-lĭz'mŭs* [Gr. *ballismos*, a jumping about, a dancing—from *ballizo*, to throw the leg about, to dance]: a variety of palsy, *Paralysis agitans*, or shaking palsy, of which the symptoms are the trembling of the limbs even when they are supported. When the patient tries to walk he is compelled to adopt a running pace. The disease is a rare one, and generally terminates with death.

BALLISTA, or BALISTA, n. *băl-lĭs'tă* [L. *ballista*—from Gr. *ballo*, I throw]: a military engine used by the ancients for throwing stones. BALLISTIC, a. *băl-lĭs'tĭk*, relating to the ancient ballista or to the modern science of ballistics. BALLISTIC CURVE, the curve taken by a projectile after firing until it strikes—a parabolic curve. See BALLISTICS.

BALLISTA, or BALISTA: one among the larger military weapons in use before the invention of gunpowder. The B., the *catapulta*, the *scorpion*, and the *onager* propelled large and heavy missiles, chiefly through the reaction of a tightly twisted rope of hemp, flax, catgut, sinew, or hair; or else by a violent movement of levers. The scorpion was a kind of large crow-bar; the B. threw stones; the catapulta threw heavy darts or arrows, and was somewhat smaller than the B. The onager was a kind of B., which threw a stone by the agency of a sling instead of a stretched cord. Numerous similar weapons were known in the middle ages—such as the *mangonel;* the *retbuchet*, which threw a large stone by the action of a lever and a sling; the *petrary*, which (as its name implies) threw a stone; the *robinet*, which threw darts as well as stones; the *mate-griffon* and *mate-funda*, both slinging machines; the *tricolle*, which hurled quarrels, or square-headed arrows; the *espringal* or *springal*, which threw large darts; the *ribaudequin*, a large kind of cross bow; the *war-wolf*, a stone-throwing machine, etc. Compare Arbalest.

BALLISTIC GALVANOMETER, a galvanometer for measuring electric currents of very brief duration, hence suited for use in determining the speed of projectiles. It measures the total electricity (in coulombs) passing through the instrument. It requires a longer needle than other G. See ELECTRICAL MEASURING INSTRUMENTS.

BALLISTIC PEN'DULUM: instrument for ascertaining the velocity of projectiles, and, consequently, the quality or the force of gunpowder, etc. One, invented by Robins, in the latter part of last c., consists of a large block of wood, suspended from a strong horizontal axis, and very solidly constructed. An excavated centre on one side of the block is filled with sand, packed in leather upon an iron frame; four bags form a filling or core. The core, forming the place of impact, is easily replaced after each firing. Straps of wrought-iron suspend the block from the wrought-iron axis or shaft. The shaft-ends have knife-edges, which rest on V supports. The construction is such, that a violent percussion makes only a very slight oscillatory movement in the block. A brass graduated limb measures the arc of vibration. This instrument is superseded by the Electro-B. P. of Maj. Navez of the Belgian army (see VELOCITY, INITIAL). For another form of instrument for similar purposes, see EPROUVETTE: for some results of these experiments, see GUNNERY.

BALLISTICS, n. pl. *bâl-lĭs'tĭks*, the study that treats of the laws governing projectiles, their velocity, motion in space, curves, force of impact, etc. It is sometimes divided into *interior* B., which tells of the forces within the gun and behind the projectile, the character of explosives, nature of their combustion, etc., and *exterior* B., which deals with the science of the mechanical forces that control a projectile during its flight. The explosion of the powder in a gun involves first ignition (lighting) of the powder, which is accomplished by a cap of fulminate, or by an electric shock; second, inflammation, or spread of the flame in the powder, which is not instantaneous, but varies with the quality of the explosive, being about four inches a second with smokeless powder, and about four miles a second with dynamite; and third, combustion or burning, which also involves a little time to free the gases which require more space, and which create the pressure that throws the projectile from the gun. The energy developed by the projectile, usually calculated as muzzle energy, is its power to do effective work, that is, carry a certain distance or deliver a blow of a certain force at a given distance. There are two methods of judging of the explosive force of powder. The *static* method is to place a block of soft metal, as copper, in the breech-block, that it may be forced out of shape by the explosion. The deformation of the copper is then accurately measured, and the result compared with other tests. The *kinetic* method depends on measuring the motion of the projectile or of some artificial object substituted for the projectile, as a

rod in the gun-breech, that jumps out backwards when it is fired, or a bullet that flies out through a hole in the side of the gun. The development of cannon (or large guns, as they are now generally called) has followed the lines of theory learned by the study of B.

Among the earliest experiments recorded are those of D'Arcy, in 1760, who used a ballistic pendulum (q. v.) and judged of the velocity by the oscillations of the pendulum-bob. He tried shortening the gun-barrel, and finding the different resulting distances to which the projectile would be thrown. Another interesting early experiment was made by Count Rumford in the latter part of the 18th century. He pointed a gun upward, put a weight on the muzzle, and exploded one grain of powder in the bore. Having found the weight that it would lift, he next tested two grains, and so on. In this way he was able to judge of the quality of different sorts of gunpowder. This demonstrated the importance of properly granulating and mixing the ingredients of the gunpowder (q. v.). Gen. T. J. Rodman, inventor of the gun of that name, demonstrated the importance of securing perfect ignition of all the particles of the powder, that all might be exploded, instead of a few exploding and dispersing the rest before it was properly ignited. He found that the shapes of powder grains had much to do with the results, and it has since been demonstrated that forming the explosive in cords (see CORDITE) promotes proper burning and securing of all the latent force in the explosive mixture.

Many ingenious methods have been employed to measure the speed of projectiles. One is to rotate very rapidly a cylinder of thin metal and to fire a shot through the moving cylinder. The difference of position resulting from the turning of the cylinder between the holes affords a basis for calculating the projectile's speed, that of the cylinder being already known. Another method is to fire through two curtains moving oppositely. Electricity furnished the best means, however, and the modern custom is to establish two stations a given distance apart, and to fire the projectile so that it cuts a wire at each station. This wire may either make or break an electric circuit, and a device records the minute difference in time between the two contacts with the projectile. Bashford's chronograph for recording the speed of projectiles employs a screen, and on the passage of the projectile an electrical impulse is sent that causes an irregularity in the spiral line that is made by the chronograph recorder. The electrical photographic apparatus of Squier and Crehore used at Fortress Monroe was brought to such perfection that it measured the speed of projectiles at five-feet intervals, showing that a projectile actually increases in speed during the first few feet after its exit from the muzzle of the gun. This is due to the fact that the gases of explosion so highly compressed follow up the projectile for a short distance, continuing to push it and accelerate its speed. By such means the speed of projectiles, hence the distance they will carry, is known.

The path of a projectile fired from a gun is always a parabolic curve. It follows the laws that govern all falling bodies. A body falling freely near the earth's surface descends about 16 ft. the first second, as the result of the earth's attraction. If a projectile is fired at a level of 16 ft. above the ground, it will reach the ground level at the same instant as if dropped directly from the gun's muzzle to the ground, that is, in one second. As the best modern guns discharge at a velocity of about 3000 ft. per second, it is evident that a gun aimed directly at an object 3000 ft. away would deliver its projectile 16 ft. below the point aimed at. To strike a target three miles away, therefore, requires a considerable elevation of the gun, which is allowed for in sighting.

The tests made in recent years of large guns fired with heavy charges of powder show that the interior of the guns is badly worn by the shocks, and the U. S. Navy in 1906 changed its policy of providing 12 and 13-inch guns for the heavier batteries, going back to 16-inch guns, which can be made to deliver as effectively as the 12- and 13-inch without such rapid deterioration. A gun is rifled to give the projectile a whirling motion, so that it may fly through the air without going off to one side. Nevertheless, when the rifling of a gun turns to the right the bullet tends to drift that way, and if to the left, the bullet turns to the left. Bullets and cannon-shot are now made long and pointed instead of globular, as they thus invite less resistance from the air. It has been demonstrated that a flattened form of projectile that would tend to sail on the air like a kite has great theoretical carrying distances, but no satisfactory means have been found for keeping it in correct position during flight, and it is not seriously considered. It is certain that when a projectile is aimed on an upward plane that the inertia of the air below it exercises a buoying action, like the air under a kite-surface; but the subject is not fully understood.

BALLISTRARIA, *bal-ĭs-trâr'ĭ-a* [Ita. *Balestriera*]: one of the names given to those projections with narrow apertures, frequent in the walls of old castles, and through which the cross bowmen discharged their arrows. See Ballista. B. do not seem to have come into use till the 13th c. The lower terminations of B. are generally circular, sometimes in the form of a shovel. See Loopholes.

BALLIUM, n. [corrup. of L. *vallium*]: an outer bulwark; the area or courtyard comprised within an outer bulwark. It contained the barracks for the garrison, the chapel, and sometimes other buildings. See Bailey.

BALLON, n. *băl'lŏn* [F. *ballon*, a foot ball (see Ball 1)]: a round globe on the top of a pillar; a round short-necked vessel used as receiver in distillation

BALLOON, n. *băl-lôn'* [F. *ballon;* Sp. *balon,* a football; It. *ballone* (see BALL 1)]: any round hollow body; a body filled with light gas, so as to rise and float in the air; in *OE.*, a game with ball. BALLOON'ING, n. or BALLOON'RY, n. the art of navigating the air in balloons. BALLOON'IST, n. one who makes balloons or ascends with them; an aëronaut. FIRE-BALLOON, one filled and raised by rarefied or heated air produced by placing fire under its mouth.

BALLOON: a round or pear-shaped bag, usually of cotton (occasionally of silk) rendered approximately air-tight by varnishing, filled with a gas lighter than the air. According to the principle discovered by Archimedes (q. v.) bodies immersed in a fluid are buoyed upwards with a force equivalent to the weight of the fluid displaced by them. If their own weight is not sufficient to counterbalance this force—that is, if they are lighter than the fluid—they rise with a force equal to the difference between the weight of the displaced fluid and their own weight. A B., therefore, which consists of an integument enclosing a gas, will rise in air in the same way that a cork rises in water, provided that the weight of the whole be less than that of an equal volume of air. If one, for instance, occupy as much space as 1,000 lbs. of air, but weigh itself—covering, gas, and appendages—600 lbs., it will be impelled upward with a force of 400 lbs. The gases employed for filling balloons are either hydrogen, ordinary illuminating gas, or hot air. The former, when pure, is between fourteen and fifteen times lighter than atmospheric air, the illuminating gas may be three to five times lighter and the hot air two to three times lighter.

The original spherical form of B. is a large pear-shaped bag, made of thin cotton or silk, covered with a varnish made by dissolving caoutchouc in oil of turpentine, to render it air-tight. The mouth or neck of this bag is large enough to enable a man to get inside to make any necessary repairs, and is, of course, turned downwards when the B. is inflated. A network of hempen or cotton twine is accurately fitted to the B., and the separate cords, on which it ends, are tied to a circular hoop placed a few feet below the neck. The car, usually a large wicker-basket, is suspended by ropes from this hoop, and hangs at a considerable distance below, so that the aëronaut may be removed from the vicinity of the gas. The network serves to distribute the weight of the car and its charge equally over the whole upper surface of the balloon. One of the most important requisites in the construction is the valve, which is introduced into the top of the balloon. It consists of a wooden clapper, four or five inches square, opening inwards, and kept closed by a spring. A rope attached to this valve descends through the neck into the car, where, to prevent accidental opening, it is allowed to dangle freely. The equipment of the car comprises the ballast or sand-bags, by emptying which the B. may be lightened; the barometer, or corresponding apparatus for telling the

height ascended, or the upward or downward course of the B.; the map and compass, for showing the direction of the voyage; and the grappling iron, tied to the end of a long rope, for anchoring the B. at the descent. The aëronaut in a spherical B. has at his disposal the means of guiding his air-ship in only an upward or downward direction, the motion of translation being wholly dependent on the wind by which it is borne. If he wish to ascend, he throws some of the ballast over the side of the car; and if to descend, he pulls the valve-rope, so that, the gas rushing by virtue of its specific lightness through the passage made for it by the open valve, the buoyant material may be lessened. It is evident that the power of thus directing his machine becomes more limited with each exercise of it, for in each case there is an unrepaired loss of the means necessary to it. In ordinary flights the mouth of the B. is left open, so that there is no danger of explosion arising from the expansion of the gas in the rarer regions of the atmosphere. The diffusion that takes place through the open neck is inconsiderable during the few hours that an aërial voyage lasts. Early aëronauts, who kept their balloons closed, frequently ran considerable risk by inattention to the valve when the imprisoned gas demanded vent for its expansion.

The art of traversing the air by means of balloons, generally called Aëronautics, and sometimes Aërostation, is of comparatively recent date. The germ of the invention of balloons is in the discovery by Henry Cavendish, 1766, of the remarkable lightness of hydrogen gas, then called inflammable air. Professor Black, of Edinburgh, seems to have been the first who conceived the idea that a light envelope, containing this gas, would rise of itself. He requested Dr. Monro, a professor of anatomy, to give him some thin animal membrane for the experiment, but for some reason or other it was never made. The first practical attempts were made by Cavallo, who, 1772, filled swine's bladders and paper bags with the gas, but found the former too heavy, and the latter too porous; and he succeeded only in raising soap-bubbles inflated with the gas. The invention of the B. is due to the two brothers Jacques and Joseph Montgolfier, paper-makers at Annonay, in France, whose names are as distinguished in the development of their own branch of manufacture as in the history of aëronautics. It immediately struck these brothers, on reading Cavendish's *Different Kinds of Air*, that the air could be rendered navigable by enclosing a light gas within a covering of inconsiderable weight. Led by their avocation, they fixed upon paper as the most fitting material for the purpose, and first attempted to make balloons of paper filled with inflammable air. Finding that these emptied themselves almost as soon as they were filled, instead of abandoning the paper as an unsuitable covering for the gas, they sought after another gas more suited to the paper. By a chain of false reasoning, which need

not here be detailed, they thought they found such in the gas which resulted from the combustion of slightly moistened straw and wool, which had, as they imagined, an upward tendency, not only from its being heated, but from its electrical properties, which caused it to be repelled from the ground. It is hardly necessary to say, that this so-called Montgolfier gas possessed no advantages for raising balloons, other than that possessed by heated air of any kind; in fact, the abundant smoke with which it was mixed, by adding to its weight, rather detracted from its merits. At Avignon, 1782, Nov., Jacques Montgolfier first succeeded in causing a silk parallelopiped, of about 50 cubic ft., to rise to the roof of a room. Encouraged by this success, the brothers made experiments on a larger scale at Annonay with an equally happy result; and finally, 1783, June, in the presence of the states of Vivarais, and of an immense multitude, they raised a B., 35 ft. in diameter, to a height of 1,500 ft. This last, nearly spherical in shape, was made of packcloth, covered with paper, and was heated by a small portable iron furnace placed beneath it, in which 10 pounds of moist straw and wool were burned.

The news of this extraordinary experiment soon reached Paris, where it produced a sensation. A commission was appointed by the Academy of Sciences to report upon it. Public curiosity, however, could not await the tardy decision of this body, and accordingly a subscription was entered into to defray the expense of repeating the Annonay experiment. Such was the excitement that the subscription was filled in a few days, and the construction of the B. was intrusted to the brothers Robert, famous philosophical-instrument makers of the day, and to Prof. Charles, a young but experienced physicist. As the detailed account of the Annonay ascent had not reached Paris, and therefore nothing was known of the Montgolfier gas, Charles fixed upon hydrogen as the gas most likely to insure success. It was, however, a formidable undertaking to produce it in sufficient abundance for a B., as it was at that time dealt with only in small quantities in the lecture-room. By ingenuity and perseverance combined, he triumphed over this difficulty, and succeeded in filling, in the course of four days, a silk globe of 12 ft. in diameter. This B. was transferred to the Champs de Mars, the largest open space in Paris, where, 1783, Aug. 27, it ascended in the presence of 300,000 spectators, half the population of the city. At the instance of the commission already referred to, Stephen Montgolfier constructed a fire balloon, 72 ft. high and 41 ft. in diameter. It ascended before the commission, 1783, Sep. 12, but being held captive, it was much injured by a violent wind, which blew at the time and after it descended it was finally broken up by heavy rains. Another was made of nearly the same dimensions, which ascended on the 19th of the same month at Versailles, the king and royal family 'assisting' at the spectacle. This ascent is worthy of note, from the fact that a

sheep, a cock, and a duck were placed in an ozier-basket attached to the lower part of the B., and that these first aërial voyagers reached the ground again in safety.

The B. being a decided success, began to be seriously discussed whether it might not be serviceable as an air-ship for bearing men aloft as passengers. The solution of this question was first given by Pilâtre des Rozier. In a Montgolfière, as the heated air-balloon was called, 74 ft. high and 48 ft. in diameter, supporting at its base a gallery of wicker-work, he, in company with the Marquis d'Arlandes, made the first aërial voyage, 1783, Nov. 21. They remained in the air 25 minutes, and sailed across the Seine and over a considerable part of Paris. On Dec. 1, Prof. Charles, with Robert, rose from the Tuileries gardens with a hydrogen B.—then called a *Charlière*—made with the proceeds of a public subscription. This B. was made of alternately red and yellow gores of silk sewed together, and coated with caoutchouc varnish. It was covered with a net which supported the car, and was furnished with a valve, a barometer, and sand-ballast, and was, in fact, a complete aërial machine. Among the names of the first professional aëronauts, those of Lunardi, Blanchard, and Garnerin deserve special note. Lunardi was the first who made an ascent in Great Britain; and Blanchard, with Dr. Jeffries, an American, crossed the English Channel from Dover to Calais, in circumstances of great danger, 1785, Jan. 7. Garnerin first descended from a B. by a Parachute (q. v.), 1797, Oct. 22. It is much to be regretted that the first aëronaut, Pilâtre des Rozier, fell a victim to a blind devotion to his art. In order to outvie Blanchard he constructed a compound machine, consisting of a hydrogen B. above and a hot-air bag below, and started from Boulogne, accompanied by a young student named Romain, on the morning of 1785, June 5. He had not ascended many minutes, when, as it afterwards appeared, on attempting to open the valve of the hydrogen B. by the rope attached to it, he caused a rent of several yards, so that it emptied itself almost immediately, and fell on the bag for hot air beneath. The fire in the latter not being kindled, the whole machine fell to the earth, and the ill-fated aëronauts perished. It is worthy of remark, that though several melancholy incidents of this kind are on record, the number of casualties in the navigation of the air has been less in proportion than in the navigation of the sea. Among several thousand aëronauts, less than 60 have lost their lives up to 1907.

In 1794, during the wars of the Revolution, an aërostatic institution was formed at Meudon, near Paris, for training a corps of men in order to observe the enemy by means of balloons. A balloon under the management of this corps was present at the battle of Fleurus, near Charleroi, fought against the Austrians. During the siege of Paris, 1870–1, the B. was extensively employed. Countless letters and several persons left the beleaguered city in balloons. There was, of course, no attempt made to come

back in such a conveyance: carrier-pigeons were the return messengers.

A B. ascent in the interest of scientific research was made for the first time 1803, July 18, at Hamburg, by Robertson and Lhoest, the main object being to observe the physiological effects of the highly rarefied air of great altitudes. The following year Gay-Lussac made an ascent of 23,000 ft. Other investigators in this field were Humboldt, Rush and Green, and Barral and Bixis. The most memorable ascents in the latter half of the 19th c. were made by Glaisher, who, 1862, Sep. 5, is said to have attained the greatest height yet recorded, 5½ m. Between 1862–66, Glaisher, many of whose aërial voyages were made at the instance and at the expense of the Brit. Assoc. for Advancement of Science, made 28 B. ascents. Among French scientific explorers of the upper regions of the atmosphere are to be numbered Giffard, Dupuy de Lôme, the astronomer Flammarion, Gaston Tissandier, and Mallet. In Glaisher's ascent, when his B. is alleged to have reached the height of 29,000 ft. as judged by the barometer, he became insensible. At the greatest elevation the thermometer stood at—2° F., and the barometer at 9¾ in., a difference of about 20 in. as compared with the reading at the earth's surface.

Gaston Tissandier, 1875, Apr. 15, ascended from Paris to a height of 27,950 ft., as shown by recording instruments. His associate died of the exposure, while Tissandier became unconscious. Later aëronauts learned to carry oxygen and inhale it, as the atmosphere does not supply enough at these great heights. In 1894, Dec. 4, Prof. Berson of Berlin ascended 28,750 ft., experiencing the low temperature of 54° F. below zero. Small B. without passengers have been sent up with recording instruments to a height of about ten miles. Count de la Vaulx holds the record for distance traveled in a B., made 1900, Oct. 9 and 10, from Paris, France, to Karothshev, Russia, in 36¾ hours, the distance in a straight line being over 1100 miles.

A B. service corps is now an adjunct of all great military undertakings. The French use them both in army and navy. A B. division is attached to each German army corps, comprising two portable gas generators, a vehicle with windlass and rope for regulating the height of the B., and necessary transport wagons. The British army has had a B. corps since 1879, and they used the B. to advantage in the Soudan in 1885 and in South Africa during the Boer War.

The first effort to build a dirigible (steerable) B. was made by Henri Gifford, who used an elongated envelop or gas-bag nearly six times as broad as it was high, being best described as spindle-shaped. On the car of this he placed propeller blades, in principle like those of a steamship, and for power he used a steam engine. It was too heavy to navigate, but Gifford received a prize for it at the Crystal Palace Exposition in London in 1852. Dupuy de

Lome was the next experimenter, and in 1870 he produced a dirigible B. with a propeller nearly 20 ft. across, the power being furnished by 8 men. The B. was heavy, but it floated, and was able to deviate slightly for the drift of the wind. A more successful dirigible B. was that of Gaston and Albert Tissandier, who in 1884 constructed an elongated B. with a 9-ft. propeller, drawn by a Siemens electric motor, supplied by a bichromate of soda battery. The motor and battery weighed over 600 lbs. and generated 1⅛ horse power for 2½ hours. The gas-envelop was 91 ft. long and 29 ft. in diameter, and the steering was done with a rudder of silk planes or surfaces. This B. was navigable in a light wind, and able to stem a breeze blowing seven miles an hour. The motor was far too heavy, and later inventors struggled to reduce the weight. Commandant Renard of the French B. corps in 1885 brought out a dirigible B. with an 8½ h.p. electric motor that weighed 220½ lbs. This steered much better, the results being improved also by placing the propeller forward instead of aft. A number of successful trials were made, in one of which a speed of 14 miles an hour was attained. Between 1897 and 1900 Alberto Santos-Dumont, a young Brazilian, built several dirigible B. in France, employing gasoline motors. Each was lighter and better than its predecessors, and in 1901, Oct. 19, his sixth machine achieved fame by carrying him from St. Cloud around the Eiffel Tower and return, a distance of 9 miles, in 30 m. and 40 s., winning for him the Deutsch prize of 100,000 f. This B. was 108x20 ft., and the power was furnished by a 4-cylinder petroleum motor much like those used on automobiles, weighing 216 lbs. and developing 20 h. p. The propeller was 13 ft. from tip to tip of the blades, and rotated at a speed of 300 per minute. Santos-Dumont has built several other dirigible B., improving slightly on his earlier models. In the United States Carl E. Myers, of Herkimer county, N. Y., built a dirigible B., operated by foot-power, bicycle fashion, in 1894. Several of these were manœuvered successfully at exhibitions at county fairs, etc. He has also built many dirigible B. for customers and inventors. Dr. August Greth of San Francisco, Capt. Thomas Baldwin of California, Roy Knabenshue, and other Americans have built models very similar to those of Santos-Dumont. A large number have also been built in both England and France, the Lebaudy brothers being the most successful, and developing numerous minor improvements. Count Zeppelin, a German army officer, built the largest dirigible B., and tested it a number of times over a Swiss lake in 1900. He placed 17 balloon bags in a large envelop held in position by a great structure of aluminum rods, 440 ft. long by 30 in diameter. Its best speed was 18 miles an hour, made for a few miles. It cost about $250,000 and was rather unwieldy. Nevertheless, he built another large one in 1906. Henry Deutsch of Paris in 1896 constructed a navigable B. for the French Government with a curious

balancing tail, formed of large gas-bags arranged X-wise. This airship is 203 ft. long and holds 113,000 cu. ft. of gas. Like all the recent constructions it has an interior bag called a ballonette, into which air is forced or let out as may be necessary to compensate for the expansion or contraction of the hydrogen gas in the balloon proper. Most builders of dirigible B. consider that the best results are had with a structure between 100 and 200 ft. in length. Aëro clubs have been established in Paris, New York and elsewhere to encourage ballooning, and these now give annual exhibitions. A training school for instruction in ballooning and aëronautics was established in May, 1907, at Chemnitz, Germany. The divisions of instruction during the year's course are as follows: Calculation of volume of balloons; methods of cutting the material; methods of rendering the material impermeable; construction of nets; gases used for inflation; the general theory of balloon construction and use; scientific instruments used in balloon ascensions; meteorological observations; ascents alone; ascents with passengers; special instructions for passengers; methods of landing, and the applications of air-ships. See AERIAL NAVIGATION, FLYING MACHINES, and KITES.

Bibliography.—The following list of articles has been published by the Smithsonian Institution, Washington, D. C.: Arago, Francis, *Aeronautic Voyages Performed With a View to the Advancement of Science* (1863); Glaisher, James, *An Account of Balloon Ascensions* (1863); Wenham, F. H., *On Aerial Locomotion* (1889); Langley, S. P., *Experiments in Aerodynamics*; Langley, S. P., *The Internal Work of the Wind;* Lilienthal, Otto, *The Problem of Flying and Practical Experiments in Soaring* (1893); Langley, S. P., *Story of Experiments in Mechanical Flight* (1897); Huffaker, E. P., *On Soaring Flight* (1897), *Letters from the Andree Party* (1897); Bacon, John M., *Scientific Ballooning* (1898); *Count Von Zeppelin's Dirigible Air Ship* (1899); Janssen, J., *The Progress of Aeronautics* (1900), *Lord Rayleigh on Flight* (1900); *The Langley Aerodrome* (note prepared for the conversazione of the Amer. Inst. of Elec. Engineers, N. Y. City, 1901, Apr. 12); Curtis, Thomas E., *The Zeppelin Air Ship* (1900); Lyle, E. P., Jr., *Santos-Dumont Circling the Eiffel Tower in an Air Ship* (1901); Langley, S. P., *The Greatest Flying Creature* (1901); Baden-Powell, Maj. B. F. S., *Recent Aeronautical Progress, and Deductions to be Drawn Therefrom Regarding the Future of Aerial Navigation* (1902); Wright, Wilbur, *Some Aeronautical Experiments* (1902); Pettigrew, Jas. Bell, *On the Various Modes of Flight in Relation to Aeronautics* (1867); Baden-Powell, Maj. B., *Progress with Air Ships* (1903); Chanute, O., *Aerial Navigation* (1903), *Graham Bell's Tetrahedral Kites* (1903); Langley, S. P., *Experiments with the Langley Aerodrome* (1904); Von Lendenfeld, R., *Relation of Wing Surface to Weight* (1904). A complete bibliography is given in the *National Geographic Magazine* (vol. xviii, No. 1; Washington, D. C., 1907, January).

BALLOT, n. *băl'lŏt* [F. *ballotter*, to choose lots; *ballotte*, a little ball—from *balle*, a ball]: a little ball or written ticket used in secret voting; the system of secret voting by placing little balls or written papers privately in a box: V. to choose or vote by ballot, now generally applied to secret voting BAL'LOTING, imp. BALLOTED, pp. *băl'lŏt-ĕd*. BAL'LOTER, n. one who votes by ballot, or conducts balloting operations. Votes may be taken by B. in various ways—e.g., the voter may deposit a ball in either of two boxes, so conjoined that no one shall be able to say into which he drops it; or he may be presented with two balls—a white and a black—and so drop one of them into a box that it shall be unknown which he used. Tickets marked 'Yes,' 'No,' or with the names of candidates, will clearly serve the purpose of balls in private voting. The Dikasts in Greece voted secretly by means of balls, stones, or shells, with marks. From this use of marked shells (Gr. *ostrakon*) in popular voting came the Greek *ostracism*, or secret vote of the people, by which they drove into exile those who became obnoxious to them. Tabulæ or tickets were chiefly used by the Romans. If the vote concerned a change in the law, the tickets were marked V.R., the initial letters of the words 'Uti Rogas,' expressing consent to the proposer's proposition; and A. for 'Antiquo,' expressing adherence to the old law. If the vote concerned the election of candidates to a public office, then the tickets bore the names of the candidates. The system of secret voting in Rome was fixed by various laws, of which the Gabiniana Lex most closely resembles the modern project of vote by ballot.

The propriety of employing the B. in private clubs has never been questioned, for to the harmony of these it is essential that the votes of a few should suffice to exclude an obnoxious person; and looking to the personal and invidious nature of the vote, it is equally essential to their harmony that the voting should be secret. A candidate for admission, who succeeds in the face of a few, though not a sufficient number of voters, could not but regard those who voted against him as enemies. But if the voting be by B., all he can know, if the voters keep their own counsel, is that a few persons are unfriendly. It is thus left open for him to associate on friendly terms with all the members—a condition of the success and continuance of such associations. But whether the system was suited to political and municipal voting used to be in Great Britain the subject of keen debate, at a time when it was in use in France, in several of the United States, and in the Australian colonies.

We have said that the system prevailed in Greece, and on its fruit there—especially in the exercise of the ostracism—there have been various opinions. While some have considered that the Athenians, for instance, acted under cover of secrecy, frequently without a just sense of responsibility, there is the authority of Mr. Grote, in his *History of Greece*, on the other side, to the effect that they exercised the right most beneficially. But as we have in Mr. Grote an advocate of the B., in Gibbon we have an opponent of it. In his *Decline and Fall of the Roman Empire*, that philosopher

dates the decline of the republic from the introduction of secret voting, which, he says, destroyed public confidence —in effect, broke up the ancient relations of patron and client, and caused a general demoralization of the people. To come to modern times, we find the B. in use in the Venetian senate; and that in Britain it was demanded first, not for the purpose of elections, but of votes in parliament. In Scotland, during the revulsions against the court in the reign of Charles II., the system was actually adopted in the legislature; but it does not appear to have afforded voters in all cases the desired protection. No one would now dream of demanding its introduction in parliament, whose proceedings, according to popular opinion, cannot be too open. On this point it may be mentioned that secret voting was the rule, for over five years (1840–45), in the chamber of deputies in France, when it was abolished, as being productive of abuse. This, however, bears on a use of the system that has now no advocates. In Victoria and New South Wales, the B. is said to have worked well, though it has been doubted whether its efficacy has been properly tested in those countries, in which there is so much individual independence, peculiar to new countries, that those who vote care little for concealment. In the United States, the general opinion is that the system is decidedly the best now practicable, though its incidental defects are clearly recognized. There are some indeed who sharply complain of its operation, claiming that it has opposed no effectual obstacle to coercion and intimidation from the majority, while those to whom the arrangements for secrecy are intrusted flagrantly betray their trust, and the voters on either side are, as a rule, well known to the public. But the opposition to the system of the B. has no popular strength.

The introduction of the B. into elections in Britain was discussed with great vigor for many years.

An element in the controversy was the question—whether the franchise was to be regarded as a public trust, or a private power to be used at the individual's discretion. The opponents of the B. maintained the franchise to be a trust, in which view it should be openly exercised. Its advocates, on the other view, held the object of the franchise to be the ascertainment of the conscientious opinions of the people. The fact is, the right of voting partakes of both characters: it is a power of expressing opinion by the agent under a sense of responsibility. The B. gives greater security for independence of thought; but the public vote is attended by the greater security for sense of responsibility. It used to be common to sprinkle pleas against the B. with high praise of the whole scheme of British politics, as open, manly, and candid, and with expressions of contempt for the B., as sneaking, and dissonant with that scheme. But the advocates of the B. were not unprepared with a ready and obvious retort to such arguments. Public feeling was kept alive on this question by annual motions in parliament. From 1835, its introduction was an open question with the whigs. The controversy was ended,

1872, July, when voting at parliamentary and municipal elections in Great Britain and Ireland was decreed to be by ballot.

BALLOT, AUSTRALIAN SYSTEM OF: plan first adopted in Australia to secure the secrecy of the ballot and to prevent the intimidation or corrupting of the voter. It provides, in brief, that all ballots shall be furnished at public expense, and that none but these official ballots shall be used. The names of all candidates regularly nominated for public offices are to be printed on the ballots. The ballots are to be distributed only by sworn ballot clerks, at the polls, to legal voters, and for actual and immediate use in voting. When the voter receives a ballot he is allowed 5 minutes in which to retire into a booth (alone) conveniently arranged, and indicate on the ballot his choice for the offices to be filled. This he may do by crossing off all names but his choice, by indicating his choice with a × opposite the name, or by crossing off all names and inserting a new one. He then proceeds directly to the ballot-box, and without allowing the face of his ballot to be seen by any one, or speaking to any one concerning it, deposits it as his vote. Should the voter spoil a ballot in preparing it, he may successively obtain others, one at a time, not exceeding three in all, on returning each spoiled one to the ballot clerks, who must immediately cancel and preserve all spoiled ballots. Should the voter be blind or illiterate, he may apply to one of the ballot clerks for assistance in preparing his ballot, and such clerk must take an oath of secrecy and fidelity before such preparation. No person is allowed to peddle or offer any ballot to another person within 100 ft. of any polling-place on the day of election. The advantages claimed for this system by its advocates are that its secrecy interposes an effectual prevention of bribery; that the secret ballot secures the voter against the coercion or undue solicitation of others, and enables an elector to vote as he pleases; that money will be less of a factor in politics in consequence of the abolition of an excuse for assessments of candidates; and that elections will more truly show the registering of the popular will.

For many years there has been in the United States a determined agitation for ballot reform and purity at the polls. Of the many plans suggested, none have seemed to answer the requirements so completely as the above system; and already its chief features, modified for local considerations, have become the ballot law of several states. Mass. was the first to reform her ballot laws in harmony with the Australian plan 1888. The same year the legislature of Ky. adopted a substantially similar plan for the city of Louisville. In 1889 Ind., Mont., R. I., Wis., Tenn., Minn., Mo., Mich., and Conn. adopted reform systems in the above order, all excepting Conn., following the Mass. bill in the main.

The Mass. plan provides, in brief, that any person desiring to vote shall give his name, and, if requested so to do, his residence, to one of the ballot clerks, who shall there-

upon announce the same in a loud and distinct tone of voice, clear and audible, and if such name is found upon the check-list by the ballot officer having charge thereof, he shall likewise repeat the said name, and the voter shall be allowed to enter the space inclosed by the guard-rail as above provided. The ballot clerk shall give him one, and only one, ballot, and his name shall be immediately checked on said list. Besides the election officers, not more than four voters in excess of the number of voting shelves or compartments provided shall be allowed in said inclosed space at one time. Then follow the directions in the Australian system for indicating the voters' choice of candidate, procuring fresh ballots for spoiled ones, and depositing the ballot. No such voter shall be allowed to occupy a voting shelf or compartment already occupied by another, nor to remain within said inclosed space more than ten minutes, nor to occupy a voting shelf or compartment for more than five minutes in case all of such shelves or compartments are in use, and other voters are waiting to occupy the same. No voter not an election officer, whose name has been checked on the list of the ballot officers, shall be allowed to re-enter said inclosed space during said election, neither shall any person take or remove any ballot from the polling-place before the close of the polls.

In N. Y. and N. J., ballot-reform laws were enacted 1890, May. The law of N. Y. provides that all ballots shall be printed and distributed at public expense; that there shall be as many different kinds of ballots as there are different political parties represented in duly certified nominations; that each co. clerk shall use the same size, quality, and tint of paper, kind of type, and quality and tint of plain black ink, for all ballots used at one election. A sufficient number of voting booths or compartments, provided with shelves, pens, pencils, ink, blotting-paper, and mucilage, shall be provided at each polling-place, with a guard-rail so placed that only such persons as are inside said rail can approach within six ft. of the ballot-boxes and of such voting booths or compartments. On receiving from the clerk one of each kind of ballots furnished for the particular polling-place, the voter shall take them to the booth or compartment, and there in secret prepare his ballot. When a voter is 'physically' unable to prepare his ballot without assistance, he will be permitted to take a person of his own selection into the booth with him. If any voter spoils a ballot, he may obtain another full set, and so on successively, not exceeding four full sets in all, on returning the set containing the spoiled ballots. The voter then folds the ballot which he intends voting so that no one can see which one it is, and before voting delivers to an inspector all remaining ballots.

In 1892, Jan., all the states and territories had enacted laws prescribing a mode of balloting based on the Australian system, except Io., Kan., Va., N. C., S. C., Ga., Fla., Ala., Miss., La., and N. Mex. and Utah.—See SUFFRAGE.

BALLOTA, n. *băl-lō'ta* [Gr. *ballote*—from *ballō*, I throw, I throw away, I reject, in allusion to its unpleasant smell]: genus of hairy or woolly plants of the ord. *Lamiaceæ* or Labiates. The plant is 2 or 3 ft. high, with whorls of purple or white flowers. *B. nigra* is Horehound (q.v.).

BALLOTTEMENT, n. *bă-lŏt'mĕnt* [Fr.—from *balloter*, to toss]: tossing; method of testing pregnancy from the 5th to the 8th month, by inserting the finger with an impulse against the uterus, and noting the sensation in the finger when the fœtus thus tossed up sinks again upon it.

BALLOTIDÆ, n. plu. *băl-lŏt'ĭ-dē* [see BALLOTA]: family of labiate plants, ranked under the tribe *Stacheæ*.

BALLOU, *băl-lō'*, HOSEA: 1771, Apr. 30—1852, June 7; b. Richmond, N. H. On account of the poverty of his father, an unpaid Bapt. preacher, he was not able to attend school till he was 20 years of age. He adopted Universalist views and was expelled from the Bapt. Church; became a school-teacher and began to preach; was settled at Dana, Mass., 1794–1802; preached five years at Barnard, Vt., and neighboring towns; was pastor at Portsmouth, N. H., eight years; at Salem, Mass., two years; and 1817–52 was pastor of the 2d Universalist Church, Boston, where he founded the *Universalist Magazine*, and became the recognized leader of the denomination. He wrote a large number of hymns, and several theological works, of which the most important was an *Examination of the Doctrine of Future Retribution*—His grand-nephew, HOSEA B., S.T.D. (1796–1861), b. Halifax, Vt., was a noted Universalist preacher, was one of the founders of Tufts College, and from 1853 till his death its president.

BALLOU', MATURIN MURRAY: editor: b. Boston, 1820, Apr. 14; son of Hosea B. (1st). He studied for college in the Boston High School, but did not enter. He was for five years a clerk in the Boston post-office; afterward for five years a clerk in the U. S. treasury dept. His literary start was made in the *Olive Branch*, and he afterward edited and owned *Gleason's Pictorial* and *Ballou's Monthly*. He has travelled over nearly the entire world, even undertaking 1886 a voyage to the Arctic regions. Meanwhile he has been an active writer and journalist, his ventures, besides those already mentioned, having been *Ballou's Pictorial*, *The Flag of Our Union*, and the Boston *Sunday Budget*. He was one of the original proprietors, and for many years chief editor, of the Boston *Daily Globe*. His writings include: *Due West; Due South; The History of Cuba* (1854); *Biography of the Rev. Hosea Ballou; Life Story of Hosea Ballou; Principles of Thought; Notable Thoughts about Women; Edge Tools of Speech* (1886); *Footprints of Travel* and *The New Eldorado* (1889); and *Aztec Land* (1890). Died 1895.

BALLS, HOLLOW, in Military Pyrotechny: used—by being thrown or cast and broken—to give light, to produce dense smoke, or to diffuse suffocating odor. Some of them, though called B., are not globular in shape. *Light-B.* con-

sist of canvas stretched over a skeleton-frame, and painted; the frame is filled with a composition of saltpetre, sulphur, resin, and linseed oil, rammed down; and is provided with a fuse, the length of which determines the time that will elapse before the composition ignites. These light B. weigh from 5 lbs. to 70 lbs. each, according to size. They are intended to give out a brilliant light, which may reveal the operations of the enemy during night at a siege or in the field. *Smoke-B.* are made of several thicknesses of paper, shaped by means of a globular core or mold. They are filled with gunpowder, saltpetre, powered sea-coal, Swedish pitch, and tallow; and are calculated, after being fired off, to send out a dense smoke for nearly half an hour, in order to blind or incommode the enemy. *Stink-B.* are filled with a composition which, when ignited, diffuses an odor almost intolerable. Most of these projectiles, especially light-B. and smoke-B., are fired from mortars, rather than from guns. For extensions of the principle of these inflammable balls, see ASPHYXIANTS.

BALL'S BLUFF: Loudon co., Va.: on the s. bank of the Potomac river; 32 m. n.w. of Washington: scene of a defeat of the Union troops by a Confederate force 1861, Oct. 21. Col. Devens was directed by. Gen. Stone to make a demonstration against the enemy on the opposite side of the river. He proceeded with a Mass. regt. to the bluff, and advanced toward Leesburg, but was driven back by a Confederate force under Gen. Evans. Col. Baker, a senior officer, arrived with a Cal. regt. and took command of the united force, numbering about 1,900. The Confederate force, of about 1,700, had a protected position and kept up a terrible fire. Col. Baker was killed; his troops retreated in confusion, but were intercepted by a Miss. regt. and utterly routed. The Union loss was more than 300 killed and 700 wounded and prisoners; the Confederate, reported 155.

BALLSTON SPA, *bawl'stŏn spā*, N. Y., county-seat of Saratoga co., on the Delaware and Hudson railroad, seven miles south of Saratoga Springs. It is noted for its mineral springs, which rank among the best acidulous chalybeate springs in the country, and was formerly a popular summer resort, but is now most important for its manufactories, which include one of the largest tanneries in the world; extensive pulp and paper mills, and agricultural implement factories. It has two national banks, several churches, public high school, and daily and weekly newspapers. Pop. (1910) 4,138.

BALLY, *băl'lĭ*, or BAL: a Celtic word or prefix, signifying 'town' or 'dwelling;' entering into the composition of hundreds of names of places in Ireland and Scotland. It is allied (see letter B) to Gr. *polis*, city, and to the Lat., Ital., and Span. *villa*.

BALLYMENA, *băl-lĭ-mē'na:* small inland town in the centre of Antrim county, Ireland; in a plain, on the right

bank of the Braid; 2 m. above its junction with the Maine, 33 m. n.n.w. of Belfast. It is in a densely peopled and well-cultivated district, the inhabitants busied in agriculture and in the manufacture of linen. B. is one of the greatest linen and flax markets in Ireland, and its vicinity is covered with extensive bleach-fields. Pop. 9,000.

BALM, n. *bâm* [F. *baume;* OF. *bausme*—from Gr. *bal'sămon; L. bal'sămum*, balsam]: a fragrant plant—the common balm is *Melis'sa offĭcinālis*, ord. *Labĭātæ;* a valuable ointment that soothes and heals; that which soothes, mitigates, or heals: V. to anoint with balm; to soothe. BALM'ING, imp. BALMED, pp. *bâmd.* BALMY, a. *bâm'ĭ*, like balm; mild; soothing. BALM'ILY, ad. *-ĭ-lĭ.* BALM'INESS, n. BALM-BREATHING, a. breathing balm, or producing a highly agreeable effect upon the senses or heart. BALM-DEW, n. odoriferous dews, or dews fitted to soothe. BALMIFY, v. *bâm'ĭ-fī*, to make balmy.

BALM, *bâm* (*Melissa officinalis*): an erect, branching perennial, herbaceous plant, nat. ord. *Labiatæ;* native of the s. of Europe. It has ovate crenate leaves, and axillary half-whorls of white flowers on one side of the stem. The whole plant has an agreeable lemon-like smell, on account of which it is frequently cultivated in gardens. The stem and leaves are used in medicine as a gentle aromatic, stimulant, and tonic. B. is employed also for making an agreeable and somewhat exhilarating beverage called balm wine. B. was formerly in much higher repute than now for its medicinal virtues. Its qualities depend on an essential oil of a pale yellow color, called Oil of Balm.

For medical use, the herb should be cut before the appearance of the flowers, which begin to expand in July. It is nearly inodorous when dried. The taste is somewhat austere, and slightly aromatic. B. produces scarcely any remedial operation upon the system. The quantity of oil which it contains is not more than sufficient to give a pleasant flavor to the infusion, which forms an excellent drink in febrile complaints, and, when taken warm, tends to promote the operation of diaphoretic medicines.—A variety of the common Cat-mint (*Nepeta cataria*), with a smell like that of B., is often mistaken for it.—MOLDAVIAN B. (*Dracocephalum Moldavicum*) is a native of the country from which it derives its name, and of Siberia, etc.; an annual plant, having, when fresh, a smell like that of B., but less pleasant. It is much used in Germany for flavoring dishes.—BASTARD B. (*Melittis Melissophyllum*), native of the s. of England and of many parts of Europe, is a very beautiful plant, which when dried has a delightful fragrance, and retains it long. All these are of the nat. ord. *Labiatæ.*

BALM OF GIL'EAD: see BALSAM OF GILEAD.

BALNAVES, *băl-nav'ĕs*, HENRY, of Halhill: eminent lay-reformer of the 16th c.; b. Kirkcaldy, Fifeshire; d. 1579 or 1580. His parents were poor, but gave him a

univ. education at St. Andrews, after which he studied in a free school at Cologne, where also he received instruction in the principles of Luther and the reformation. On his return to Scotland, he studied law, and when Arran was appointed to the regency, B. was made sec. of state. In 1543, he was imprisoned on account of his Protestantism. When liberated he appears to have been active on the Protestant side; and it is asserted that he was privy to the conspiracy for the murder of Cardinal Beaton. Later he was captured by the French, and with Knox and others sent to Rouen as prisoners of war. In prison B. wrote a treatise on Justification (to which Knox added marginal notes), afterwards published with the title of *The Confession of Faith.* When Mary of Guise was raised to the regency, 1554, B. returned to Scotland and was one of the commissioners who settled the treaty of Berwick, 1559-60, which established by law the reformed religion in Scotland. In 1563, B. was nominated a commissioner to revise *The Book of Discipline.*

BALOTRA, *bâl-ō'trâ*: town of India, in the Rajpoot state of Joudpore, 59 m. s.w. of the city of Joudpore; on the right bank of the river Loonee. Being on the high-road from Joudpore to Dwarka, a celebrated place of pilgrimage in the west of Guzerat, it is a great resort of pilgrims, with whom its bazaar is often crowded. Many of the inhabitants of the town subsist by providing for their wants. The town is supplied with good water from 125 wells, lined with masonry. Pop. 7,275.

BALSA, n. *băl'sa*, or BALZA, *băl'za* [Sp. and Port. *balsa*]: a raft or fishing boat, used chiefly on the Pacific coast of S. America.

BALSAM, n. *bawl'sam* [Gr. *bal'sămon*; L. *bal'sămum*, balsam (see BALM)]: a soothing ointment of an oily nature; a semi-fluid resin. BALSAMIC, a. *băl-săm'ĭk*, or BALSAM'ICAL, a. *-ĭ-kăl*, like balsam; soft; unctuous; mitigating. BALSAM'ICALLY, ad. *-lĭ*. BAL'SAMIF'EROUS, a. *-ĭf'ĕr-ŭs* [L. *fero*, I produce]. BALM OF GILEAD, or BALSAM OF MECCA, common names for the resinous juice of the balsam-tree of Syria, reckoned very precious; the juice of the *Balsăm-ŏdĕn'dron Gilĕădĕn'sĕ*, ord. *Burserăcĕæ*. BALSAM OF SULPHER, an ointment considered useful for foul ulcers, prepared by dissolving 1 part of flowers of sulphur in 8 parts of olive-oil (oil of turpentine sometimes used). BALSAM OF SATURN, an ointment prepared from sugar of lead and oil of turpentine, etc. BALSAM-WEED, *Graphalium polycephalum*, a plant used in the manufacture of paper. BALSAM'ICS, n. plu. *-ĭks*, in *med.*, applied to several preparations for external use. BALSAMA'TION, n. *-ā'shŭn*, the act or operation of impregnating with balsam.

BAL'SAM: a mixture of resins in volatile oils, the term, however, being popularly applied to any aromatic compound with volatile oils. Balsams are very widely distributed throughout the plant kingdom. They are particu-

larly abundant in the members of the pine family. The araucarias yield a copal that is almost a pure resin; many species of pine yield turpentine and resin; Canada balsam is derived from *Abies balsamea:* the balsam-like sandarach is from a cypress. The *Hamamelis* family gives balsam of styrax, and balsam of copaiba is derived from a large number of the legumes and from the *Dipterocarpeæ.* Styrax benzoin is from the *Storax* family. The resins and balsams of commerce are very closely allied. They may be divided into three groups: gum resins, such as asafœtida and ammoniacum; balsams and resins, such as turpentine, resin, copaiba, mastic, elemi, copal, dammar, and sandarach; and the balsams and resins that contain cinnamic or benzoic acids, from which they derive their aromatic odor. It is to this latter group that the word balsam is popularly applied. These are balsam of tolu, balsam of Peru, styrax, benzoin, dragon's-blood and xanthorrhea resin. These various bodies are for the most part secreted in special passages in the plants. Sometimes they are formed in the leaves, but for the most part the resinous solution collects in specially designed portions of the stem, usually in the woody portion. It is obtained in a variety of ways from simple incision to boiling chips of the wood with water.

In medicine most of these bodies are active. They are energetic oxidizers,—hence the traditions about ozone and pure air in pine-clad hills,—and several of the hydrocarbons in the volatile oils are stimulating to the skin and mucous membranes, turpentine being an excellent example. It is an excellent external antiseptic, and manifests similar properties on the respiratory, intestinal, and genito-urinary tracts. Those resinous or balsamic mixtures containing cinnamic and benzoic acids—notably balsam of tolu (from *Toluifera pereiræ*) and balsam of Peru (from *Toluifera balsamum*) possess similar antiseptic and stimulating properties. They are more powerful in proportion to the aromatic acids contained. Balsam of styrax is derived from a tree, *Liquidambar styraciflua.* It has similar properties to the balsam of Peru.

The chrism (see SACRAMENTS) used for consecration and sacramental services should be made of balsam from Syria or Mecca; when this is difficult to obtain, balsams from Brazil or Peru may be used.

BAL'SAM, or BALM OF GILEAD: liquid resinous substance, prized not only for its fragrance, but also for medicinal virtues. The finest balsam, called Opobalsam or Balm of Mecca, is obtained by incisions, is at first turbid and white, but finally becomes of a golden yellow color, and of a consistence like honey. B. of Gilead is irritating when applied to the skin.

Other substances, sometimes designated balsams, and possessing similar fragrance, are produced by different species of *Amyridaceæ* (q.v.). Among them is one called American Balm of Gilead, the produce of a tree called *Icica Carana,* not the 'Balm of Gilead' poplar; also a

number of species of *Clusiaceæ*—Balsam of Umiri, a fragrant yellow fluid, by *Humirium floribundum*, a South American tree of the nat. ord. *Humiriaceæ*.—CANADIAN BALSAM is a kind of turpentine obtained from the Balm of Gilead Fir (*Abies Balsamea*); HUNGARIAN BALSAM, from the Mugho or Mountain Pine (*Pinus Pumilio* or *Mughus*); and CARPATHIAN BALSAM, from the Stone Pine (*Pinus pinea*). See FIR and PINE.—BALSAM OF COPAIVA is the produce of different species of *Copaifera*. See COPAIVA.

BAL'SAM: common name of a sub-order of succulent herbaceous plants, *Balsamineæ*, order *Geraniaceæ*, of botanists, of which the beautiful B. (*Impatiens balsamina*

Balsam (*Impatiens Noli-me-tangere*).
a, top of stem with leaves and flowers; *b*, ripe fruit unopened; *c*, ripe fruit, elastically opening.

or *Balsamina hortensis*), much cultivated in gardens and green-houses, is a familiar example. Upwards of one hundred species are known, natives chiefly of damp bushy places in the East Indies, and many of them plants of great beauty. Almost all are annuals, and have generally white or red flowers. This nat. ord. is very closely allied to *Geraniaceæ* (see GERANIUM) and *Oxalideæ* (q.v.), wood-sorrel, etc., but is distinguished from both by the extreme irregularity of the flowers, and from the former also by the beakless fruit, which is a five-celled capsule, bursting by five elastic valves. The leaves are simple and without stipules, the flowers generally axillary.—The common B. is a native of the East Indies and Japan. Many fine varieties have resulted from careful cul-

tivation. It has an upright succulent stem, usually about 1–2 feet high, but in favorable circumstances will attain a greater size. It often appears with flowers partially double, but still capable of producing seed. In Britain, the seed is usually sown on a slight hotbed, and the plant is often kept in the green-house; although even in Scotland it may be made an ornament of a sheltered border. It is one of the flowers frequently to be seen in cottage-windows. A vulnerary was formerly prepared from it, whence it has its name. One species of B. (*Impatiens Noli-me-tangere*), called Yellow B., or Touch-me-not, is a native of Europe, and a doubtful native of Britain. It has yellow flowers, and one of the petals prolonged into a spur. Its ripe capsules burst on the slightest touch. This and two other species are natives of North America.

BALSAMODENDRON, *băl'sa-mo-dĕn'dron* [Gr. balsam-tree]: genus of small trees or bushes, nat. ord. *Amyridaceæ* (q v.), having small green axillary flowers, small dry oval fruits, and small pinnated leaves with 3 or 5 leaflets. Some of them are spiny: they generally appear scrubby and have little foliage. Balsamic substances are obtained from their wood and fruit—as Balsam of Gilead (q.v.), Myrrh (q.v.), Bdellium (q.v.), and Oriental Elemi (q.v.). The red resinous wood of *B. Katof* is a common article of sale in Egypt; and a species called Schnee is much cultivated in Afghanistan for its aromatic and stimulant properties. All the known species are natives of the East Indies, Arabia, and the east of Africa, except that which yields African bdellium, found in Senegal.

BALTA, *bâl'tâ:* a well-built and thriving town, in the govt. of Podolia, Russian Poland: on the Kodema, an affluent of the Bug. Pop. over 20,000.

BALTIC, a. *bawl'tĭk* [old Sw. *bælt*, as two of its entrances are still called: L. *baltĕŭs*, a belt]: from the Baltic or its shores, or relating to them. *Note.*—Perhaps the name *Baltic* may be connected with the worship of *Bel* or *Baal*, the ancient sun-god. See BAAL.

BALTIC PROVINCES, *bawl'tĭk* (in Russia): in a wider sense, the five Russian governments bordering on the Baltic—viz., Courland, Livonia, Esthonia, Petersburg, and Finland; in a restricted sense, it often designates the first three. The Baltic provinces once belonged to Sweden, except Courland, which was a dependency of Poland. They came into the possession of Russia partly in the beginning of the 18th c., through the conquests of Peter the Great, partly under Alexander in 1809. They have still very various constitutions, though the usual 'government' machinery has been introduced, and every effort is made completely to Russianize them. The five Baltic governments in the wider sense have 191,526 sq. m., and (1897) pop. 7,015,126.

BAL'TIC SEA: the great gulf or shut sea bordered by Denmark, Germany, Russia, and Sweden, and communicating with the Kattegat and North Sea, by the Sound and the Great and Little Belts; length, from 850 to 900 m.; breadth, from 100 to 200; area, including the Gulfs of Bothnia and Finland, about 160,000 sq. m. Its depth is on

an average 15–20 fathoms, in many places not half so much, seldom more than 40–50, and never exceeding 167. Its shallowness and narrowness, the flat coasts of Prussia on the one side and the rocky coasts of Sweden on the other, and above all the numerous and sudden changes of wind accompanied by violent storms, make the navigation very dangerous. The group of the Aland Islands divide the s. part of the sea from the n. part or Gulf of Bothnia (q.v.). The Gulf of Finland (q.v.), branching off eastward into Russia, separates Finland from Esthonia. A third gulf is that of Riga or Livonia. The Kurisch and other Haffs (q.v.) are not gulfs, but fresh-water lakes at the mouths of rivers.

The water of the Baltic is colder and clearer than that of the ocean. It contains only a fifth of the salt of the Atlantic, and ice hinders its navigation from three to five months yearly. Tides, as in all inland seas, are little perceptible—at Copenhagen, about a foot; yet the water rises and falls at times, though from other causes, chiefly from the varying quantity of water in the rivers at different seasons. Upwards of 250 rivers flow into this sea. The chief from Germany are the Trave, Warnow, Oder, Rega, Persante, Vistula, Pregel, and Niemen; from Russia, the Windau, Düna, Narva, Neva, and Ulea; and from Sweden, Tornea, Lulea, Pitea, Umea, Angerman, Dal, the water of Lake Maeler, and that of Wetter and other lakes through the river Motala. The basin of the Baltic occupies at least 880,000 sq. m., or about one-fourth of all Europe; and only about a fourth of the boundary of the basin is mountainous. The principal islands are Zealand, Fünen, Bornholm, Samsöe, Möen, Langeland, and Laaland, belonging to Denmark; the Swedish islands Gottland, Oland, and Hveen (in the Sound); the Aland Islands, Dagö, and Oesel, belonging to Russia; and Rügen, to Prussia. The number of vessels that pass the Sound to or from the Baltic annually is very large. See SOUND DUTIES. Timber, hides, tallow, and grain, are chief exports from the countries on the Baltic. The Eider or Schleswig-Holstein canal, connecting the Baltic near Kiel with the North Sea at Tonningen, facilitates the grain trade in mild winters. The two seas are connected also by the Gotha canal, which joins the lakes of south Sweden. The most important harbors in the Baltic are: in Denmark, Copenhagen and Flensburg; in Germany, Schleswig, Kiel, Travemünde (Lubeck), Wismar, Rostock, Stralsund, Stettin, Swinemünde, Danzig, Elbing, Königsberg, Pillau, and Memel; in Russia, Riga, Revel, Narva, Kronstadt, and Sveaborg; and in Sweden, Stockholm, Karlskrona, and Ystad.—The shores of the Baltic in Prussia and Courland have been long noted for the amber cast ashore by the waves in stormy weather. Another important phenomenon connected with the Baltic is an alleged slow vertical movement of its coasts, *downwards* in the south of Sweden, but further north *upwards*, being there supposed to be at the rate of 3 ft. in a century. See Lyell's *Principles of Geology*.—The Germanic nations call this sea *Ostsee*, or Eastern Sea; the name Baltic is derived by Dr. Latham from an island Baltia, mentioned by Pliny, and which Dr. Latham considers to be Zealand.

BALTIMORE, *bawl'tĭ-mor* or *-mōr:* the chief city of Maryland, seat of justice of B. co.; and a port of entry; lat. 39° 17′n., long. 76° 37′w.; on the n. bank of the Patapsco river, 14 m. from its entrance into Chesapeake Bay, 178 m. from the Atlantic Ocean, 40 m. n. e. from Washington, 98 m. s.w. from Philadelphia, 185 m. s.w. from New York. B. is connected by railway with Philadelphia, Washington, Annapolis, Winchester, Columbia, York, Lancaster, Harrisburg, etc. It is about 4½ m. long from e. to w. and 3½ broad from n. to s. A stream, called Jones's Falls, divides it into two nearly equal parts, and supplies water power and pure water. Twenty-three bridges have been erected, many of them beautiful and costly, especially the great white marble bridge which is one of the engineering feats of the times. The total land area of the city (including harbor area (1,507 s. m.) is 31,648 s. m.

History.—B. was laid out in 1730 within a very limited space, and received its name in honor of Calvert, Lord Baltimore. Various small settlements were afterwards made in the vicinity, which were gradually absorbed into B., until, in 1752, it had about two dozen houses and 200 inhabitants. In 1756, a number of Acadians, who had been expelled from the w. shore of Nova Scotia, settled in B. In 1767, the co. seat was established here, and a court house was built on the site of the resent battle monument. Within a few years of the opening of the Revolution, a newspaper was published in B., there was a theatre, and a stage line connected B. with Philadelphia and New York. In 1776, the town contained over 550 houses, and nearly 6,000 inhabitants. In that year, the Continental Congress met in B. After the close of the Revolution, the city grew with rapidity, new acquisitions being in large numbers Protestants from the north of Ireland, although the colony was originally Roman Catholic. In 1796, B. was made a city, and a mayor was chosen.

In 1814, during the war with Great Britain, B. was attacked by the British forces, and a fierce battle occurred in which the Americans were defeated. Fort McHenry, between the harbor and the Patapsco river, commanding the entrance to the port, was bombarded by the British in 1814, on which occasion the celebrated national song, 'The Star Spangled Banner,' was composed by Francis Scott Key, who was an American prisoner on board one of the English ships. B. became noted at the opening of the civil war by a mob attacking, 1861, Apr. 19, parts of the 6th Mass. and 7th Penn. regiments, which were passing through the city to the defence of Washington thus shedding the first blood of the war. The Union forces occupied Federal Hill on May 23, and the city remained under martial law till the end of the war. The greatest catastrophe in the history of the city was the fire which started 1904, Feb. 7 (Sunday),

and burned until the 9th, entailing a loss which was estimated at about $70,000,000. The fire began in the large wholesale dry goods establishment of John E. Hurst & Co., and owing to a strong wind from the southwest soon consumed 8 or 10 buildings on Hopkins Place, then spread to the north and east, rapidly devouring block after block of buildings. At 8 o'clock on Sunday the wind shifted and blew the fire down Lombard, German, Baltimore and Fayette streets, and despite the extensive use of dynamite in Baltimore and several other streets to obstruct its path, it leaped from building to building. The Baltimore & Ohio Central Building, the Equitable and Calvert buildings and the lofty sky-scrapers on Charles, St. Paul, Calvert and Baltimore streets were early victims and shortly after flying embers set fire to the Maryland Institute, the Marsh Market and the blocks on the south side of Baltimore Street below Gay Street. The city hall, post-office, and court house on the south side of Fayette Street, from St. Paul to Holliday St. were saved. At midnight the wind shifted to the northwest and headed the fire toward the water and the docks. Relief companies with full equipments from outside cities were sent and before the fire had been brought under control on the 8th there were 62 fire organizations fighting the flames. In all there were about 80 blocks of buildings burned, embracing a large part of the city's finest public and private business structures. The greatest anxiety was concerned with the moneys and securities in the vaults of the financial and banking institutions, but though 11 bank buildings, 9 financial institutions, besides a number of private banking houses and other houses of a like character containing securities, deposits, cash, etc., aggregating many millions, were burned to the ground, the vaults held good and in so far as is known the fire did not reach the valuables and the entire contents were preserved. Owing to the number of financial institutions involved, a special session of the legislature was convened, Federal troops placed on guard in the burned district and the city placed under martial law for one week. There was comparatively little looting and order was maintained throughout the city; business was resumed in temporary quarters, and building operations began within a short time.

Commerce and Transportation.—B. is situated at the head of tide water on an arm of the Chesapeake Bay, 12 m. long by an average of 3 m. wide, forking at the peninsula on which Fort McHenry stands, and thereby creating the land-locked harbor known as the Northwest Branch. The tidal movement being only 1 foot to 1½ ft., ships of great burden may be easily docked or moored at any stage of the tide. South of this peninsula is another wide fork of the greater harbor known as the Middle Branch on which are located the great terminals of

the Wabash railroad. There is also a ship canal from the inner harbor to the sea of sufficient depth to permit the passage of ships drawing 31 ft. of water. Among the railroads entering the city are the Pennsylvania system, Baltimore and Ohio, Western Maryland, Baltimore and Potomac, Northern Central, Wabash, etc. All the works on the n. side of the city are connected with tide water at Canton by tunnels, which are among the largest structures of the kind in the country. The B. and Potomac tunnel through the west side of the city is, excepting the Hoosac tunnel, the longest in America (6,699 ft.). The Northern Central has one 3,500 ft. long through the northeast and the Baltimore and Ohio one 1 1-3 m. long running through the city from north to south. The huge grain elevators of the Pennsylvania railroad are located at Canton on the north side of the harbor and those belonging to the Baltimore and Ohio system at Locust Grove on the south side.

More than a dozen steamship lines connect the city with all the leading English and Continental ports; the Hamburg-American Packet Line, The Red Star Line (Antwerp), and the Norddeutscher Lloyd Line ply regularly from here. There are 8 or 10 coasting lines on the bay alone and also steamship connection with New York, Boston, Halifax, Providence, Wilmington, N. C., Charleston, Savannah, New Orleans, etc., and steamboat lines to Norfolk, Richmond, Washington, Philadelphia, etc. In 1905 the tonnage of vessels entered and cleared was 1,224,960 and 2,249,698 respectively.

B. is one of the largest flour centres in the world, is the chief market for tobacco in the country and is the foremost corn-exporting port in the United States, handling on an average 40,000,000 bushels a year besides 20,000,000 of other grain. Other exports are provisions, live-stock, boots and shoes, naphtha, coal, drain-pipe, copper, cotton, petroleum, etc. Of the imports the chief are iron and manganese ores, coffee, West India products, etc. From 1904, July 1, to 1905, June 30, the total exports were $91,172,888 and from 1905 to 1906, $109,801,118. Imports for the same periods 1905 and 1906 were $21,181,239 and $30,655,017 respectively.

Manufactures and Industries.—The last census report gives the number of manufacturing establishments in Baltimore as 2,162, with a capital of $148,106,726; wage earners 65,013; wages $25,548,343; value of products, including custom work and repairing, $150,248,021. There were 1,309 individual establishments, with a product valued at $21,740,256; 476 firms whose products represented $50,635,124; and 373 incorporated companies, with a product valued at $77,721,291; four miscellaneous establishments manufacturing $151,350 worth of goods. The clothing trade of Baltimore is one of its chief industries and has greatly increased since the fire of 1904. There are 40 factories manufacturing men's and youth's clothing, employing about 12,000 hands and

BALTIMORE.

1. The Cathedral.
2. Washington Monument and Mount Vernon Methodist Episcopal Church.

paying yearly wages to the amount of nearly $6,000,000. One of the most important industries of the city is canning and shipping of oysters, its volume being about 8,000,000 bushels per season. Fruit and vegetables are also canned on an extensive scale. Other industries are iron and steel works, shipbuilding, flour milling, textile manufactories, foundry and machine shops, slaughtering and meat-packing, breweries, lumber and planing mills, manufactories of furniture, confectionery, fertilizers, tobacco, etc.

Finances and Banking.—In 1906 the estimated taxable valuation of property was $548,522,063, besides which there were additional real estate assessments involving easements of $23,350,000. The funded debt of the city to 1906, Jan. 1, was $43,313,182.95; the productive assets amounted to $25,586,690.45 and the unproductive assets to $20,000,000. In 1906, June, there were 18 national banks capitalized at $12,590,700, leaving surplus of $6,510,800, undivided profits of $2,204,426.85 and deposits of $74,404,338.37. There were 14 trust, bonding and surety companies capitalized at $15,531,000. Their complete surplus and undivided profits and deposits are not obtainable but of those which have reported the following figures represent the conditions: (12) surplus and undivided profits, $21,389,040; (6) deposits $23,664,694.18. There are also a number of State and private banks. In 1905 the clearing house transactions amounted to $1,249,411,909.

Monuments and Public. Buildings.—Baltimore is known as "The Monumental City" because of the number and beauty of its public monuments. Principal among these is the Washington Monument, in the heart of the city, at the intersection of Mount Vernon Place and Washington Place. This monument stands on ground 100 ft. above tide water; its total height above the river is 312½ ft. On its base, 50 ft. square and 20 ft. high, stands a Doric shaft 176½ ft. high, which supports a colossal statue of Washington 16 ft. in height. The whole is built of brick cased in white marble, and cost $200,000. In Monument Square, at the junction of Fayette and Calvert streets, stands the Battle Monument, erected, 1815, in commemoration of the defenders of the city, who fell in the previous year, in battle against the British. There are also the Wildy Monument, the Wells and McComas Monument, the Armestead Monument, the monument to the Marylanders who fell in Mexico, the Revolutionary Monument and the Soldiers' and Sailors' Monument, erected by the Daughters of the Confederacy, the Poe tombstone in the churchyard on the Westminster Pres. Church, and others.

The public buildings of B. are among the finest in the country. The City Hall, completed 1875, occupying an entire square, cost $2,375,400.43 (including the furnishing). It is of marble in the Renaissance style, four stories high with French roof, and an iron dome 260 ft.

in height. Its other dimensions are 225 x 140 ft. The U. S. Court-house is a fine granite structure. The new Court-house of white Maryland marble is a splendid building, the interior being finished with the most expensive marbles of the world. It has 8 of the largest monolithic columns in the United States, weighing 38 tons each. The cost of the building was $2,753,003.18. The post-office is a fine building and cost $2,011,835. The new custom-house now (1906) being erected will cost several millions, and be worthy of the city. There are also some handsome buildings erected by the various societies and orders of the city.

Churches.—Baltimore has 489 church buildings, many of them of great beauty, both externally and internally. The most important is the first Metropolitan Catholic Cathedral, corner of Mulberry and Cathedral streets. This building is of granite, in the form of a cross, and is 200 ft. long, 177 broad, and 127 high. It was commenced in 1800. The great dome is 231 ft. in circumference. Two tall towers rise from the roof at the w. end. It contains one of the largest organs in the country; also two interesting paintings, gifts of Louis XVI. and Charles X. of France. Other churches of striking beauty, or possessing other elements of interest. are the Mount Vernon church (Meth. Epis.), which fronts the monument, built of granite serpentine, and faced with Ohio and Connecticut sandstone, with eighteen Aberdeen granite polished columns, and near this, the First Pres. Church, said to be the finest specimen of Lancet-Gothic architecture in America. It has a spire 268 ft. high, and side towers 78 and 128 ft. high respectively. The neighborhood of these two churches is the aristocratic residence quarter, and contains the finest private dwellings in the city.

Charitable Institutions.—Baltimore has a large number of charitable institutions among which may be mentioned Maryland Hospital for the Insane, Springfield State Hospital, Baltimore Orphan Home, Charity Organization Society, All Saints Home for Children, Female House of Refuge, Female Christian Home, etc.

Parks.—Druid Hill Park consists of 671 acres and is well laid out. Patterson and Carroll Park also deserve mention. There are in all 11 parks in the city, covering about 1,400 acres.

Water Supply.—The water-works system is owned by the city and the rates are fixed by law. The revenues in 1905 were $908,973.82. There are 645 m. of water mains in the city and the daily per capita consumption is 125,000 gallons. There are two sources of supply; the Big Gunpowder river, with an average daily flow of 170,000,000 gallons, and Jones's Falls, 35,000,000 gallons.

Education.—The Johns Hopkins University, one of the great institutions of B. and one of the most influential in the country, was founded by Johns Hopkins, who died

JOHNS HOPKINS HOSPITAL.

in 1873, and has an endowment of over $3,000,000. The institution affords special opportunities for original research, and its new home in 'Homewood Park' will increase its efficiency. The Univ. has 145 instructors, about 700 students and over 1,500 graduates. The library contains over 100,000 volumes. The Johns Hopkins Hospital is the medical department of the Univ. and has an endowment of over $2,000,000. The Maryland Institute of Art and Design was incorporated in 1826, has a large faculty and has had a total of more than 25,000 students. The library contains 20,000 volumes. It was in the main hall of the old institution that John C. Breckenridge was nominated for president 1860, April 23. The new home of the institution is located on Mount Royal ave., and is admirably adapted to its purposes. The Woman's College, educationally and artistically, is one of the show institutions of the city. Its tower is an exact counterpart of a campanile just outside Ravenna, Italy, andis one of the conspicuous objects of the city. The Academy of Science, the Waltus Art Gallery, Peabody Institute are noteworthy institutions. The latter was founded by George Peabody, the London banker, and contains a free library of 75,000 vols. The city is rich in libraries among which may be mentioned the Enoch Pratt Free Libraries, the gift of Enoch Pratt; the Central Library, with 6 branches and some substations; the Maryland Historical Library, containing the Calvert papers; the Peabody Reference Library, the Baltimore Library, the library of the Maryland Institute, etc. The city department of education consists of a board of school commissioners, a superintendent, two assistants and a supervisor of buildings; there are 118 school buildings, about 1,750 teachers and 75,000 scholars.

Government.—The executive authority of the city under the revised charter is reposed in a mayor who holds office for four years and a city council of two branches; the lower of 22 members one representing each of the 22 wards of the city; the upper of 11 members, one from each two contiguous wards. The mayor's veto may be overridden by a three-fourths vote of the city council. The mayor with the consent of the upper branch of the council appoints the majority of the city officers; the council appoints the city register and the public printer and the comptroller and surveyor are elected by popular vote. The annual cost of maintenance averages from $8,000,000 to $10,000,000.

Population.—Its progress is shown by the census as follows: (1790) 13,503; (1800) 26,514; (1810) 35,583; (1820) 62,738; (1830) 80,625; (1840) 102,313; (1850) 169,054; (1860) 212,418; (1880) 332,190; (1890) 434,-439; (1900) 508,957; (1910) 558,485.

BALTIMORE, Cecilius (or Cecil) Calvert, second Lord B.: abt. 1605-1675, Nov. 30; son of the first Lord B. Of his place of birth and early history nothing is cer-

tainly known. His wife, Ann Arundel, whom he married abt. 1628, gave name to a Md. co. On his father's death 1632 the charter for the Md. plantation was issued to Cecilius; and 1633 he dispatched to the new domain a band of colonists under the direction of his bro. Leonard Calvert (q.v.), whom he appointed his *locum tenens* in the govt. of the colony. Cecilius never visited the Md. settlements, which for 43 years of his life were governed by his deputies. His instructions to his deputies regarding their dealings with the aboriginals and the settlers evinced a wisdom and a moderation that were universally commended.

BALTIMORE, Charles Calvert, third Lord B.: 1629–1714, Feb. 24: b. London; son of the second Lord B. He was governor of Md. for his father 1662–75, when he became lord proprietary and continued to govern the colony in person till 1684, when he returned to England. During his governorship the peace of the province was continually disturbed by acts of resistance on the part of the settlers to the exercise of feudal rights by the lord proprietary under the charter, and by the machinations of the adherents of the Anglican Church, whose aim was to constitute that the established church. By withstanding their demands Lord B. greatly promoted religious toleration, and as a necessary consequence religious liberty in the English colonies in America.

BALTIMORE, George Calvert, first Baron B.: abt. 1582–1632, Apr. 15; b. Kepling in Yorkshire, Eng. He graduated at Oxford 1597, and then, after return from foreign travel, became sec. to Robert Cecil, and afterward clerk of the privy council. He was a sec. of state when, 1617, he received from James I. the honor of knighthood. The king bestowed on him a pension 1620. Having become a member of the Rom. Cath. Church, he resigned the secretaryship of state 1624; but was in such favor with James that he still remained privy counselor. He was made an Irish peer 1625, with the title Baron B. He had long taken an interest in American colonization and was a member of the Virginia Company. A patent was granted him 1621 by which he became lord proprietary of the s. promontory of Newfoundland, to which he gave the name Avalon. The scheme of colonizing Avalon proved a costly failure, and the land concession was abandoned. James's successor, Charles I., then made a grant to B. of all the territory in the present states of Md. and Del.; but before the patent could be engrossed Lord B. died. The charter or patent contemplated the establishment of a modified feudal system, with hereditary landlord aristocracy, tempered by an assembly of freeholders, whose consent was a prerequisite for the validity of all laws. In the *Proceedings* of the Md. Hist. Soc. (1880) is a list of books relating to the life of the first Baron Baltimore.

BALTIMORE-BIRD, or Baltimore Oriole (*Ic'terus Baltimorii*): a very beautiful bird, found in all parts of the United States as far n. as 55° n. lat., but migrating to

LORD BALTIMORE.

tropical or sub-tropical regions in winter. It belongs to the family *Icteridæ*, blackbirds, etc., or American starlings. The B.-B. is in size somewhat larger than the black-and-chestnut Orchard Oriole; the bill conical, very acute, and a little curved; the plumage brilliant, particularly in the adult males, glossy black finely contrasting with bright orange and vermilion; the tail longish, rounded and slightly forked. The bird is remarkably active; its song extremely agreeable. Its nest is a curious and interesting structure—a pendulous cylindrical pouch six or seven inches long, usually suspended from two twigs at the extremity of a lofty drooping branch; the materials, which vary according to circumstances, woven together with great nicety, and sometimes sewed through and through with long horse-hairs. The nests of other species of *Icterus* are also pensile. Several are natives of N. America, and others of S. America. They are quite distinct from the true Orioles (q. v.).

BALTIMORITE, n. *bawl-tĭ-mōr'īt* [from *Baltimore;* suff. *ite*]: a mineral, considered by Dana as identical with Picrolite. It is composed of longitudinal fibres, adhering to one another. Its lustre is silky. When thick, it is opaque, but when thin, transparent on the edges.

BALUCHISTAN, *bă-lô'che-stăn'*: a country in the south of Asia, lying between Persia and the valley of the Indus, having the former on the west, Afghanistan on the north, Scinde on the east, and the Arabian Sea on the south; area, about 134,000 sq. m. It is wholly under British influence and partly under British rule, while the Khan and Kelat is ruler of a considerable portion, and certain tribes are independent. The general surface of Baluchistan is rugged and mountainous, with some extensive intervals of barren sandy deserts. In the case of the principal ranges, the general parallelism and uniformity of their formation are somewhat remarkable, one system having an inclination from north to south, another from east to west. Many of these mountains are of great height and are covered with snow. There are several broad and high table-lands, extremely cold in winter and extremely hot in summer. Mekran in the south, the ancient Gedrosia, is one of the hottest regions of the globe. Some of the mountain chains are of compact limestone, enclosing marine shells and corals identical with similar objects picked up on the sea-shores at this day. Excepting fragments of quartz found in Lus, primary formations have not been observed in any part of the Baluchistan Mountains. The mineral wealth of the country is believed to be considerable, including gold, silver, lead, iron, copper, many kinds of mineral salts, and saltpetre. Throughout Baluchistan there is a great deficiency of water, particularly in summer. In the northeast part are the rivers Bolan and Mula, the courses of which form the celebrated passes bearing their names, leading from the valley of the Indus to Baluchistan and Afghanistan. The soil is not in general

fertile, but by patient industry the plains and valleys can be made productive in wheat, barley, and millet. The other chief crops are madder, cotton, particularly in Cutch Gundava, rice, indigo, and tobacco. Vegetables are abundant, and excellent fruits are produced in the gardens and orchards in the neighborhood of the towns. Fine camels are bred in large numbers.

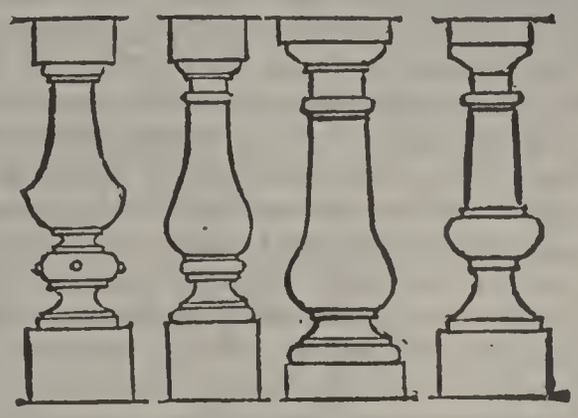
The inhabitants are divided into two great branches, the Baluchis and the Brahuis, different in their languages, figures, and manners, and each subdivided into a number of minor tribes. The Brahuis have greater physical strength than the Baluchis, and are less addicted to predatory violence. Both races are hospitable, brave, and capable of enduring much fatigue. Many of them live in rude tents made of black felt or coarse cloth of goat's or camel's hair stretched over a frame of wickerwork. Both Baluchis and Brahuis are very ignorant but zealous Mohammedans. The Baluchi language resembles the modern Persian, the Brahui presents many points of agreement with the Hindu. The manufactures are mostly confined to coarse fabrics and a few matchlocks and other weapons, and the trade is unimportant. The kahn, so far as his rule extends, has unlimited power over life, person and property. He usually resides at Kelat, and his rule is almost confined to the country around it.

About the middle of the 18th century Baluchistan was made tributary by Nadir Shah, who bestowed it, with the title of *beglerbeg*, or commander-in-chief, on Nasir Khan, who proved himself the ablest ruler that ever governed the country. On his death in 1795 he left the country in a comparatively prosperous condition, but it has since suffered greatly from intestine wars, and its boundaries have been curtailed. During the Afghan war in 1839 a British force was detached to assault Kelat, which was taken by storm after a siege of a few hours, 13 November the same year. The British again occupied it in 1840, but in the following year they left the country. Latterly a British protectorate over the whole of Baluchistan has been established, and the town of Quetta (which is now reached by railway from India) and a part of the country have been absolutely annexed. The khan receives an annual subsidy from India. The population is estimated at about 800,000.

BALUCKI, Michael: Polish author, known under the pseudonym Elipidon: b. Cracow, 1837, Sept. 29. He has written *The Awakened* (1864); *The Old and the Young* (1866); *Life Among Ruins* (1870); *The Jewess* (1871); *For Sins Not Committed* (1879); 250,000 (1883); Comedies: *The Chase After Man* (1869); *The Emancipated* (1873); *Amateur Theatre* (1879); *The Open House* (1883).

BALUSTER, n. *băl'ŭs-tĕr* [F. *balustre*—from It. *balaustro:* Sp. *barauste,* corrupted into *balaustre*—from *bara* or *vara,* a rod]: one of a row of small columns or pilasters set

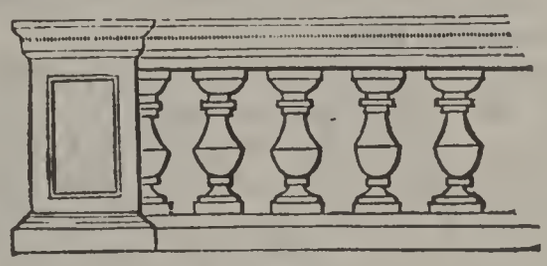
in line as supports to a cornice or coping, or as guards to a stairway (when it is often corruptly spelt *banister*). These miniature pillars either have generally a pear-shaped swelling at the lower end, or consist of two pear-shaped pieces,



Balusters.

one above the other, a ring of moldings being set between them. This makes the profile resemble an ancient bow or Ballista (q v.), from which some derive the name; other derive it from Lat. *palus*, Eng. *pole* or *pale*. BALUSTERED, a. *băl'ŭs-tĕrd*, furnished with balusters.

BALUSTRADE, n. *băl'ŭs-trād* [F.]: a row of little pillars united by a coping, serving as a fence for staircases, a parapet for bridges, the roofs of large edifices, etc., or as a mere termination to the structure, or to inclose stairs,



Balustrade.

altars, balconies, etc. Balustrades are made of stone, metal, or wood.

BALZAC, *bâl-zâk'* or *băl'zak* HONORÉ DE: one of the best of modern French novelists: 1799, May 20—1850, Aug.; b. Tours, where his father held a civil office. At the age of twelve, he entered the college of Vendôme, but finished his studies at the Pension Lepitre, in Paris. B. early in his career wrote about 30 volumes, under the names St. Aubin, M. de Veillergré, St. Alme, etc. He received some trifling assistance in writing these novels, which were so unsuccessful that he lived in great poverty. In 1826, he entered into partnership with the printer Barbier, and published various works; but the speculation turned out so ill, that he fell into debt, and returned to book-making. His perseverance was admirable. Although long utterly unsuccessful, he continued to write until he opened a path for himself by his novel *Les Derniers Chouans, ou la Bretagne en* 1800 (Par. 1829). In this book he abandoned for

the first time the manner of Pigault and Lebrun, which he had hitherto adopted. Among his best works are the *Physiologie du Mariage* (2 vols. Par. 1831), *Scènes de la Vie Privée* (5 vols. 1831), *Scènes de la Vie Province* (1832), *Scènes de la Vie Parisienne* (1832), *Le Médecin de Campagne, Le Père Goriot, La Peau de Chagrin, La Recherche de l'Absolu,* which were all received with much favor by the public. Of all his novels, two only can claim artistic completeness; the *Histoire Intellectuelle de Louis Lambert,* and *Eugène Grandet.* His other works suffer more or less from unnaturalness, diffuseness, and the want of a solid knowledge of the world, although there is great richness of description in portraying individual features of character, as drawn directly from the heart. B. has immense power over his female readers. In his *Contes Drólatiques, colligez ès Abbaies de Touraine, et mis en lumière par le Sieur de Balzac pour l'esbattement de Pantagruelistes et non aultres* (2 vols. Par. 1833), he follows exactly in the footsteps of Rabelais. Success made B. conceitedly ambitious. He thought himself equal to the most distinguished authors of all time, and represented the aim of his literary activity to be, to give a complete picture of human life in all its varied phases. Some recent English and American critics incline to place him in the highest rank of novelists. As a dramatic author he decidedly failed. A collected edition of his works in 45 vols. was published in Paris, 1856–59. An English translation of his Letters, with a Memoir by his sister, was issued in 1878.

BALZAC, Jean Louis Guez de: 1594–1655, Feb. 18, b. Angoulême. In youth he was secretary to Cardinal la Valette at Rome, whence he returned to Paris and devoted himself to the refinement of his native language. He has a permanent place in French literature, for though his writings have little intrinsic worth, they heralded the splendid phalanx of genius which adorned the age of Louis XIV. He was a favorite of Cardinal Richelieu, a member of the French Academy, a councilor of state, and historiographer. His violent literary disputes with Father Goula caused him to leave Paris and retire to his hereditary property of Balzac. A collection of his works appeared in Paris, edited by L'Abbé Cassaigne (2 vols. Par. 1665; 3 vols. Amst. 1684). Of all his works, his *Lettres* (4 vols. 1806–74), have been most admired, and are still read. Selections from his writings were arranged by Malitourne (1882) and Moreau (1854). See Moreau de Mersan's *Pensées de* B. (1807).

BALZARINE, n. *băl'za-rēn* [F.]: a light mixed material of worsted and cotton, for ladies' dresses.

BAMBARRA, *băm-băr'ra:* one of the states of Sudan, western Africa, lying, so far as has been ascertained, between lat. 12° and 14° n., long. 15° e. and 5° w., and occupying both sides of the Joliba or Niger, which flows through its centre from s.w. to n.e. The principal towns of B. stand on the banks of this river. The mountains in

which the Niger has its source divide it on the s. from Guinea; the Sahara desert bounds it on the n.; on the w. Senegambia; and on the e., some of its sister-states. In general the country is said to bear considerable resemblance to the agricultural districts of England; but in the w. there are low chains of granite hills, continuations of the highlands from which the Niger springs. The climate in some parts is intensely hot; in others, more temperate, but generally healthful. The rainy season lasts from June to November. The land is well watered and fertile. Double crops of corn, rice, maize, yams, etc., are raised annually without much labor.

The butter-tree, cotton-tree, oil-palm, baobab, and date are among the most important indigenous growths. The manufacturing industry of B. is important; the women making a soft coarse cloth, much esteemed for its beautiful blue color, and the men articles in gold, iron, and ivory, in which much trade is carried on. The inhabitants, chiefly Mandingoes, are said to be superior to their neighbors in intelligence, and to be much sought after as warriors by the petty chiefs around them. They generally lend their assistance on condition of a certain payment. The upper classes profess Mohammedanism; the lower are pagans. The introduction of Mohammedanism has had at least one good effect, supplying the native dialect with a written speech through the use of Arabic letters. The chief domestic animals are horned cattle, goats, sheep, and fine horses. The wild animals are lions, leopards, elephants, wolves, panthers, etc.; and venomous reptiles, of which the natives are much afraid. Crocodiles are numerous in the rivers, which abound also with fish. The principal towns are Sego, Sansanding, Yamina, and Bammaku, all populous. The country has a nominal monarch, but it is in reality ruled by several chiefs.

BAMBERG, *băm'bĕrg:* city of Bavaria, district of Upper Franconia, beautifully situated on the banks of the Regnitz, not far from its confluence with the Main, in the midst of vineyards, orchards, and hop-gardens. B., which has considerably declined in importance since the Reformation, is a city of considerable antiquity, having originated, it is said, with a colony of Saxons, 804. The most noteworthy of its public buildings is the cathedral, a magnificent edifice in the Byzantine style, founded by the emperor Henry II. 1004, and restored after fire in 1110. It contains, among other monuments, the elaborately carved tomb of the founder and his empress, Cunigunda. Attached to the cathedral is a library, with valuable missals and manuscripts, and what is represented to be the prayer-book of Henry II. There are several other fine ecclesiastical structures of early date, and the old palace of the former prince-bishops of Bamberg. The ruins of the castle of Altenburg, originally the seat of the Counts of Babenberg, and the scene of many important historical events, stand on an eminence about a mile and a half from

the town. The educational institutions of B. are numerous. The people are largely engaged in the manufacture of beer, which is famous throughout Germany, also of cotton, cloth, gloves, musical instruments, etc. A large export trade in licorice and garden-seeds is carried on. Pop. (1890) 35,248; (1900) 41,820.

BAMBINO, *bâm-bē'nō:* the swaddled figure of the infant Saviour, which, surrounded by a halo, and watched over by angels, occasionally forms the subject of altar-pieces in Rom. Cath. churches. The *Santissimo* B., in the church of the Ara Cœli at Rome, is held in great veneration for its supposed miraculous power of curing the sick. It is carved in wood, painted, and richly decorated with jewels and precious stones. The carving is attributed to a Franciscan pilgrim, out of a tree that grew on Mount Olivet, and the painting to Luke the Evangelist. The festival of the B., at the Epiphany, is attended by great numbers of country people, and the B. is said to draw more in the shape of fees than the most successful medical practitioner in Rome.

BAMBOCCIADES, *băm-bŏk'sē-ādz,* in Painting: grotesque scenes from common or low life—such as country-fairs, penny-weddings, boors merry-making. The name is derived from Peter van Laar, a painter, who, on account of his personal deformity, was surnamed Bamboccio (Cripple); but he was not the first painter of such scenes.

BAMBOO, n. *băm-bô'* [Malay, *bambu*], (*Bambusa*): genus of gigantic tree-like grasses with hollow, jointed stems. Some species attain great size, many of them 20 or 30 ft., some 70 to 100 ft. in height. The species are numerous, in tropical and subtropical regions, both of the eastern and of the western hemispheres. They have important uses. All of them have a jointed subterranean root-stock (rhizome), which throws up 10-100 stems. These are generally straight and erect; although one large species (*B. agrestis*), common in dry mountainous situations in the s.e. of Asia, has crooked, and sometimes creeping stems. The stems grow to their full height unbranched, but afterwards throw out straight horizontal branches, especially in their upper parts, forming a dense thicket; and many of them being strongly armed with spines, they are planted for defense, presenting a formidable barrier, even against regular troops. Some of the smaller kinds are often planted as hedges. The stems are jointed like those of other grasses, very hard, but light and elastic, hollow, containing only a light spongy pith, except at the joints or nodes, where they are divided by strong partitions. They are, therefore, readily converted into water-vessels of various sorts; and when the partitions are removed, they are used as pipes for conveying water. They are also much employed for house-building, for bridges, etc. The smaller stems are converted into walking sticks, and are imported into Europe under the name of B. cane, both for that purpose and to be employed in light wicker-work. In China,

the interior portions of the stem are used for making paper. Some of the species grow to the height of only a few feet; and almost all of them are slender in proportion to their height, although *B. Guadua*, a native of New Granada and Quito, has a trunk 16 inches in diameter. The stems of different species vary also very much in the thickness of the woody part, and so in their adaptation to different purposes. The external covering of the stem is, in all the species, remarkably siliceous; the stem of *B. tabacaria* is so hard that it strikes fire when the hatchet is applied. This species is a native of Amboyna and Java; its slender stems are polished, and used for the stalks of tobacco-pipes. The leaves of some kinds are used for thatch, and the Chinese plait hats of them; of the external membrane of the stems of some, they make paper. From the knots of the *B.* there exudes a saccharine juice, which dries upon exposure to the atmosphere and which the Greeks called *Indian Honey.* It is also sometimes named *Tabaris* or *Tabasheer;* but this name more properly belongs to a phosphorescent substance, containing silica and lime, and possessing remarkable properties, which forms in the joints of some species of B., and of other large grasses growing in dry situations.

Bamboo.

The young shoots of some kinds of B. are eaten like asparagus, or are pickled in vinegar. Those of *B. Tulda*, a common Bengalese species, are used for these purposes when about 2 ft. long. The seeds of some species are used as rice, and for making a kind of beer. Bamboos are generally of very rapid growth, and they are often found in arid situations, which would otherwise be destitute of vegetation. It is not improbable that they may yet be employed, where they do not naturally abound, to render districts productive which are now little else than deserts, in cli-

mates like those of Arabia, the n. of Africa, and Australia; and the quality of the grain of different species seems to deserve more attention than it has ever received. The species common in the West Indies (*B. vulgaris*) is supposed to have been introduced from the East Indies. A few species are found in the Himalaya, at a height of 12,000 ft., and a dwarf species from that region has been successfully tried in the open air in England.

BAMBOOZLE, v. *băm-bô'zl* [It. *bamboccio*, an old dotard or babish gull: Dut. *bum*, to hum; and *baesen*, to rave or talk idly. Scot. *bumbazed*, puzzled, astonished]: to make fun of a person; to cajole by confusing the senses; to deceive; to confound; to mislead. BAMBOO'ZLING, imp. BAMBOO'ZLED, pp. *-zld.*

BAMBOROUGH CASTLE, *băm'bŭr-rŭh:* one of the oldest castles in Britain; on the n.e. coast of Northumberland opposite the Farne Isles (q. v.). On its site Agricola is said to have built a Roman fortress. According to the Saxon Chronicle, Bamborough Castle was erected by Ida, first Saxon king of Northumbria, 550. It appears to have been a royal residence for long after. In 642, it was unsuccessfully besieged by Penda, King of Mercia; and during the Danish descents on England it was twice partly demolished. In 1095, Mowbray, Earl of Northumberland, fell into the hands of William Rufus, who had lured him to Newcastle; and his countess surrendered the castle under the threat of his eyes being put out. When Northumberland was granted to Henry, son of David of Scotland, Bamborough Castle was reserved for the English crown, and here Baliol acknowledged Edward I.'s supremacy in 1296. During the Wars of the Roses, it was the scene of several conflicts, and so battered and destroyed that it has not been used since as a fortress. In the time of Queen Elizabeth, its governor was Sir John Forster, in whose family it continued till 1716, when it was bought with the Forster estates, by Lord Crewe, Bp. of Durham, who left it with other property to trustees for benevolent purposes. One of these, the Rev. Dr. John Sharpe, bequeathed his library to the institution. The income, abt. £9,000, is expended in providing a market for the sale of provisions and groceries to the poor at prime cost: a dispensary for gratuitous advice and medicines to the sick; funds for maintaining, educating, and starting in life poor children of the district; lifeboats and apartments for shipwrecked sailors; a constant patrol during stormy nights for 8 miles along the coast; repairing churches, and aiding young men at the universities. Bamborough village, near the castle, was a royal borough before the Conquest, and in the time of Edward I. returned two members to parliament. Pop. about 3,500.

BAMBOUK, *băm-bôk':* a country of Senegambia, w. Africa, in the angle formed by the Senegal and Faleme rivers; roughly estimated at 140 m. in length, and from 80 to 100 in breadth. The climate is unhealthful, especially during

the rainy season; but the valleys are remarkable for their fertility. Trees common to w. Africa here attain enormous proportions. Vast herds of wild oxen roam the hills, and most of the wild animals of Africa abound. B. is remarkable for its gold, which the natives exchange for salt, cotton and other manufactured goods. Its inhabitants, the Mandingoes, are professedly Mohammedans, but they cling to many pagan superstitions, and are very ferocious. Four centuries ago, B. was for a short time in the possession of the Portuguese.

BAMBUSA, n. *băm-bū̆z-a* [Latinized from the Mahratta or Malay word *bamboo*]: genus of grasses, type of the section *Bambuseæ*. It contains the well-known Bamboo or Bamboo-cane, *Bambusa arundinacea*. Other species from Asia and the adjacent islands are *B. maxima*, 100 ft. high, from the Malay archipelago; *B. aspera*, from *Amboyna*, 60 or 70 ft.; and *B. apus*, from Java, of as ample dimensions. The American species are less numerous, but *B. latifolia*, from the Orinoco, is very fine.

BAMIAN, *bâ-mē-ân′*: a fruitful valley and pass of Afghanistan, leading from Cabul to Turkestan; about a mile in breadth, enclosed by steep rocks. It is at an elevation of 8,496 ft., and is the only known pass over the Hindu Kush for artillery and heavy transport. It was one of the chief centres of Buddhist worship, and with its two colossal statues was described by the Buddhist monks who visited India in the 4th and 5th c. The statues are found on a hill about 300 ft. high, in which are a multitude of cells excavated in the rock all round, and rising above one another in irregular tiers. The male figure is about 160 feet, the female 120. Both are natural in attitude, and clothed in light drapery; the face of the former is the most perfectly preserved. Each figure is hewn out of a deep niche, also elaborately carved, and representing royal personages and a variety of symbols which resemble those on the coins of the Sassanidæ. Each contains a winding stair by which it is possible to ascend to the head. The whole valley is covered with the ruins of tombs, mosques, and other buildings, once belonging to the town of Ghulghuleh, which more recently occupied this site, and was destroyed by Genghis Khan, 1221. Eight m. e. of B. is the ancient fortress of Zohak, attributed to the fabulous Persian Serpent-king of that name. The fortress is preserved for the purpose of guarding the important pass. Both there and in the valley of B., a great number of coins, ornaments, and other antiquities have recently been found, and fully described by Masson, Wilson, Prinsep, Wood, and others.

BAMLITE, n. *băm′līt* [after *Balme* in Norway, where it occurs]: a mineral, a variety of Fibriolite, white or grayish in color, and columnar in form.

BAMP′TON LECT′URES: founded by the Rev. John Bampton, Canon of Salisbury, who left estates originally worth £120 per annum, to the University of Oxford, for the

endowment of eight divinity-lecture sermons, to be preached at Great St. Mary's every year, and to be published, at the expense of the estate, within two months of their being preached. The preacher is to lecture on one of the following subjects: The Confirmation of the Christian Faith, and the Confutation of all Heretics and Schismatics; the Divine Authority of the Scriptures; the Authority of the Primitive Fathers in Matters of Christian Faith and Practice; the Divinity of Christ; the Divinity of the Holy Ghost; the Apostles' and Nicene Creeds. No person is qualified to preach these lectures who has not taken the degree of M.A., either at Oxford or Cambridge, and the same person shall never preach them twice. The first course was delivered 1780. In 1834–35, no lecturers were appointed, and no lecture was preached in 1841. With these exceptions, there has been an unbroken series of very valuable, but rather learned than popular, discourses. The most remarkable are the following: Those delivered 1784, on Christianity and Mohammedanism, by Dr. White, who was accused of having obtained assistance in their composition from Dr. Parr and Dr. Badcock; those by Dr. Tatham, 1790, on the Logic of Theology; those of Dr. Nott, 1802, on Religious Enthusiasm—this series was directed against the movement by Wesley and Whitefield; those of Dr. Mant, 1812; those of Reginald Heber, 1815; Whately, 1822; Milman, 1827; Burton, 1829, on the Heresies of the Apostolic Age; Soames, 1830, on the Doctrines of the Anglo-Saxon Church. But of the whole series, none have caused greater excitement and controversy than those delivered by Dr. Hampden, 1832, on 'The Scholastic Philosophy considered in its Relation to Christian Theology.' They were attacked on all sides, but especially by the leaders of the Oxford Tract Association. Hampden was accused of Rationalism and Socinianism. When he was appointed Regius Professor of Divinity, 1836, a petition against his appointment was sent up to the throne; and upon this being rejected, a censure was passed upon him in convocation by a large majority, declaring his teaching to be unsound, and releasing undergraduates from attendance at his lectures. Notwithstanding this, he was raised to the see of Hereford, 1847, under the government of Lord John Russell—thirteen of the bench of bishops protesting against the appointment. The course of Bampton Lectures delivered by the late Dean Mansel, 1858, on 'The Limits of Religious Thought,' caused a less bitter, but scarcely less interesting controversy. Mr. Mansel had great power as a dialectician, and his lectures contained many very eloquent passages. The main position which he took up was, 'That the human mind inevitably, and by virtue of its essential constitution, finds itself involved in self-contradictions whenever it ventures on certain courses of speculation,' i.e., on speculations concerning the infinite nature of God. He maintained that all attempts to construct an objective or metaphysical theology must necessarily fail, and that the attainment of a philosophy of the

Infinite is utterly impossible, under the existing laws of human thought—the practical aim of the whole course being to show the 'right use of reason in religious questions.' Mr. Mansel was accused by his critics of condemning *all* dogmatic theology (e.g., all creeds and articles), and of making revelation itself impossible. Mr. Maurice was one of his principal opponents. Canon Liddon's lectures, 1866, on our Lord's Divinity, have been the most important since Dean Mansel's. The Bampton Lectures 1874 were delivered by the Rev. Stanley Leathes, on 'The Religion of the Christ;' in 1879, by Mr. Wace, on 'The Foundations of Faith;' and in 1880, by Mr. Hatch, on 'Early Christian Organization.'

A course of lectures similar to the Bampton was founded about the same time at Cambridge by the Rev. John Hulse. See HULSEAN LECTURES.

BAMPURA, or BHAMPURA *b'ham-pō'rā*, or BHANPURA. *b'han-pō'rā:* town of Hindustan, territory of Indore; on the Rewa, 1,344 ft. above the sea; about 180 m. s.w. of Gwalior. It is at the base of a range of hills, is surrounded by a wall, and has an unfinished fort, stone, which encloses an unfinished palace. Both palace and fort were begun by Jeswunt Row Holkar, of whom there is a beautiful marble statue in the palace. B. is the principal place of a pergunnah containing 70 villages. Pop. 20,000.

BAN, n. *băn* [AS. *gebann*, a proclamation: L. *bannīrĕ*, to call to the ban or standard, to make a signal (see BANNER): Sp. or It. *bando*, a decree, banns of marriage: mid. L. *bannum*, a proclamation: Sw. *bann*, excommunication]: originally a summons to the army; a public notice; a curse; a censure; an interdict; a sentence of outlawry; in Slavonia, Croatia, etc., the viceroy or lord-lieutenant (see BAN or BANUS): V. to curse; to interdict; to proclaim; in Germany, the *acht* or *bannum* was a sentence of outlawry pronounced in the middle ages against those who escaped from justice, or refused to submit to trial. Refractory princes and even cities were often placed under the *ban of the empire*. The following are the terms of banning used in an old formula: 'We declare thy wife a widow and thy children orphans; we restore all thy feudal tenures to the lord of the manor: thy private property we give to thy children; and we devote thy body and flesh to the beasts of the forest and the fowls of the air. In all ways and in every place where others find peace and safety, thou shalt find none; and we banish thee into the four roads of the world—in the devil's name.' Besides these sentences of outlawry, many other announcements were accompanied with denunciations and imprecations; hence the origin of the popular use of the word. It occurs in this sense in Shakspeare and Milton, and other old writers. BAN'NING, imp. BANNED, pp. *băn'd*. BANS or BANNS, public notice or proclamation in a church of an intended marriage. See BANNS. BANAT, n. *băn'ăt*, the territory governed by a ban. See BANAT. *Note.*—BAN in F. history designated the great vassals who held directly of the crown. ARRIÈRE-BAN, a corruption of mid. L. *heriban'-*

num—from Ger. *heer-ban*—from *heer*, an army, designated the tenants and followers of a *ban*, in the Slavonic tongues *ban* signifying a master.

BAN, or BA'NUS: supposed by some to be a contraction of the Illyric word *bojan*, i.e. lord, but more probably another form of the Slavonic word *Pan*, which has the same signification. Formerly, it was a title given to some of the military chiefs who guarded the eastern boundaries of the Hungarian kingdom, and was therefore synonymous with the German *Markgraf*. The ban, who was appointed by the sovereign, but not for life, and whose appointment had to be ratified by the national diet, had originally very extensive, in fact almost unlimited, powers. In political, judicial, and military affairs, he was the supreme authority. Within his own territory he exercised an influence similar to that of the Palatin in Hungary, and lower only than that of a king. In time of war, he headed the troops of his *Banat* (q.v.), and if the campaign occurred within its limits, it was his duty invariably to occupy the post of danger. He led the van to battle, or covered the rear in retreat. For these services he was recompensed partly in ready money, and partly by a monopoly of salt. The most important banats were those of Dalmatia, Croatia, Slavonia, Bosnia, Machow, and Szorény, but their boundaries changed so frequently that it is impossible to ascertain what they originally were. The encroachments of the Turks in the 16th c. rendered the union of the various banats necessary; and, after some time, the whole were formed into the double banat of Dalmatia and Croatia. A more complete unity was subsequently obtained by centralizing the military power. In 1723, the authority of the B. was made entirely subordinate to that of the supreme government of Hungary. After numerous vicissitudes, his powers, rights, and titles were strictly defined during the reign of Maria Theresa. He was then acknowledged to be the third dignitary of the Hungarian kingdom, appointed a member of the Hungarian council of government, and president of the council of the Banat, and at the coronation of the Hungarian king went before him bearing the golden apple, the symbol of sovereignty. Such was the position of the B. until 1849, March 4, when Croatia, Slavonia, and Dalmatia were transformed into Austrian crown-lands, and the B. made wholly independent of Hungary. In 1868, Croatia and Slavonia were reunited with Hungary. One of the Hungarian ministers superintends the affairs of the 'Kingdoms of Croatia and Slavonia;' while there is a special local administration for internal affairs. The head of this administration is called the Ban.

BANANA, n. *bă-nâ'nă* [Sp. or Indian]: a herbaceous plant, originally East Indian, but much cultivated in nearly all tropical countries. It is now generally regarded as a mere variety of the Plantain (q.v.); although they were formerly ranked by botanists as distinct species, the Plantain under the name of *Musa Paradisaica*, and the B. of *M. sapientum*—the specific name signifying 'of the wise

men,' and being intended to convey an allusion to a statement by Theophrastus concerning a fruit which served as food for the wise men of India, and which, from his description, is supposed to have been the plantain or banana. The names plantain and B. are somewhat vaguely used in their application to different cultivated varieties, which are very numerous; those called B. have generally dark purple stripes and spots on their stems, and the fruit is smaller, less curved, and of more delicate taste than the plantain, with a soft and luscious pulp. Each fruit is generally about four or five inches long. The B. is always used in a ripe state, and never like the plantain, as a substitute for bread; unless when the pulp is squeezed through a fine sieve, and formed

Banana.

into small loaves, which, when dried, may be kept for a great length of time, but which are saccharine, and not farinaceous. It is sometimes fried in slices; it is often made into preserves; and its juice affords an excellent wine. It has been produced of good quality in hot-houses in temperate climates.—The fruit of *Musa Cavendishii* is sometimes also called banana. See PLANTAIN.

BANA'NA BIRD (*Xanthornus Icterus*): a beautiful bird, allied to the Baltimore-bird (q.v.), which it considerably exceeds in size; native of the West Indies and warm parts of America. Its colors are tawny and black, with white bars upon the wings. It is very lively. It is gregarious, and a number of the nests may often be seen near each other, suspended to the extremities of slender branches of trees, so as to be out of the reach of snakes and monkeys. It is often kept in houses to destroy insects. It is very easily domesticated, and delights to be caressed.

BANAS, *bân'ás*, or BUNAS: name of three rivers in India. —1. A river of Rajpootana, rising on the w. frontier of Mewar, in the Aravulli Mountains, about n. lat. 24° 47′, e. long. 73° 28′. Flowing through Mewar 120 m., in a generally n.e. direction, receiving the Beris, or Beruch, on the right, and the Botaseri on the left, it passes the town of Tonk, where it changes its course to the s.e., and falls into the Chumbul in n. lat. 25° 54′, e. long. 76° 50′, after a total course of 320 m.—2. A river which also rises in the Aravulli Mountains, and after a s.w. course 180 m., is lost in the Runn of Cutch, ending in a number of small and intricate channels.—3. A river of Rewah, in Bundelcund, having a n.w. course abt. 70 m., and falling into the Sone near Rampur.

BANAT, *bâ-nât'*: any district or territory under a ban or chief, but applied specially to a province of the Austrian empire, which has, curiously, *no* ban. It is bounded on the w. by the Theiss; on the s., by the Danube; on the e., by the line of mountains which separates Hungary from Walachia and Transylvania; and on the n., by the Maros. It consists of the three Comitate, Temesvár, Torontál, and Krassowa. It is partly mountainous and partly flat, but everywhere copiously watered, and exceedingly fertile. The chief rivers are the Temes and Karasch. The climate is warm in summer, and comparatively cold in winter; but, though not unpleasant, it is far from salubrious in the west, on account of the swamps and morasses which abound. Nevertheless, it is the most productive of the Austrian provinces, yielding rich crops of wheat, spelt, and other grains; the vine is little cultivated. Wild-fowl are numerous, and the rivers swarm with fish. The mines are valuable; coal, iron, copper, gold, silver, and zinc being procured in considerable quantities. The mineral springs of Mehadia are in great repute. The principal town is Temesvár.

B. belongs to the Hungarian portion of the Austrian empire. It was formed into an Austrian crown-land, 1849, but was restored to Hungary, 1860. Pop. (1890) 1,500,000.

BANAWARAM, *bâ-nâ-wâr-âm'*: town of India, territory of Mysore, in a fine open country, among the headwaters of the Hugri, 81 m. n.w. from Mysore. It is a town of some antiquity. It was taken 1694, in a night-assault by Chika Deo, Rajah of Mysore. When it had fallen under the dominion of Hyder Ali, the inhabitants were in great part removed to Nagapuri, a new town which Hyder had founded in the vicinity. Previous to this removal, the pop. was about 10,000. The new town proving extremely unhealthful, the survivors of the people of B. were permitted to return to their old habitations.

BANBRIDGE, *băn'brij*: small town in the w. of Down county, Ireland; on a steep slope on the left bank of the Bann, 76 m. n. of Dublin. It is a thriving seat of the linen manufacture in all its stages, from the preparation of the soil for the flaxseed to the finishing of the finest linen.

Miles of bleaching-greens exist in the vicinity, and numerous factories along the Bann. Pop. 5,367.

BANBURY, *ban'bėr-e:* small town in the n. of Oxfordshire, on the right bank of the Cherwell, 23 m. n. of Oxford. Here was formerly a very strong castle, built about 1125, which sustained various sieges during the early English civil wars. At Danesmore, near B., the Yorkists were defeated, 1469. B. is the centre of the famous rich red land of Oxford county, among the most fertile in the kingdom. A system of canals connects the town with all parts of England. The vicinity is thickly studded with villages. Numerous remains of the ancient Britons are found in the neighborhood. B. is noted for its manufacture of agricultural implements, and for malt liquors, cheese, and cakes. There are also manufactures of plush, shag, girth, and other webbing. Pop. 12,967.

BANC, Sittings in: see Banco.

BANCA, *băng'ka:* a Dutch island s.e. of Sumatra. It has a very rugged surface, one hill being 2,300 ft. high. Area, 4,894 sq. m.; pop. (1900) 106,305, of whom 204 were Europeans, 50,021 Malays, and 20,495 Chinese. Gold, iron ore, silver, lead and amber are found, and tin is exported.

BANCO, n. *băng'kō* [It. a bench, a bank]: a commercial term meaning the standard money in which a bank keeps its accounts, as distinguished from the current money of the place. The distinction was more necessary when the currency consisted, as it often did, of clipped, worn, and foreign coins. These the early banks (Venice, Amsterdam, etc.) received at their intrinsic worth, and credited the depositor in their books with this bank-value. The term was chiefly applied to the money in which the Hamburg bank kept its accounts, before the adoption of the new universal coinage of the German empire. It was not represented by any coinage. The Hamburg Mark B. (=$0.355 sterling) was to the current mark (=$0.29) as 20 to 16. Sweden had a peculiar bank-money, 8 dollars B. being equal to 3 dollars specie. Genoa had at one time a bank standard, and the present current money, being different from that, is still called 'fuori banco,' outside the bank. Sittings in banc or banco, so called when all the judges of the superior courts of common law are present, and occupy their respective seats or *benches*.

BANCROFT, George, ph.d., d.c.l., d.j.: historian: 1800, Oct. 3—1891, Jan. 17; b. Worcester, Mass.; son of the Rev. Aaron B. From Phillips (Exeter, N. H.) Acad., he went to Harvard, graduating 1817. For the next two years at the Univ. of Götting, Ger., he studied under Benecke, Bunsen, Eichhorn, Heeren, and Blumenbach. He received the degree of ph.d. from Göttingen 1820; and at Berlin and at Heidelberg applied himself to the study of history under Schlosser and others, returning to the United States 1822. For a year he taught Greek at Harvard, publishing a vol. of poems at Cambridge 1823; and

then joined Joseph G. Cogswell, afterward supt. of the Astor Library, New York, in founding the Round Hill school at Northampton, Mass., on the plan of Eton College, England. B. published translations of Heeren's *Politics of Ancient Greece, the States of Antiquity*, etc. (Boston 1824); and an oration in favor of universal suffrage 1826. He was elected to the legislature 1830, but refused to serve, having now formed and begun to execute the plan which was to result in his life work. He published Vol. I. of his *History of the United States*, Boston 1834, and Vol. II. 1837. In 1838 Pres. Van Buren appointed him collector of the port of Boston; 1844 he was nominated the democratic candidate for gov. of Mass., and was defeated by only a small vote. Pres. Polk appointed B. sec. of the navy; and his term of service, 1845, Mar. 10—1846, Sep. 9, was distinguished by his establishment of the U. S. naval acad. at Annapolis, Md. He forestalled future action by giving instructions for the seizure of California, in the event of a war with Mexico; and, as acting sec. of war, he also gave orders for the first occupation of Texas by the U. S. govt. B. was U. S. minister to Great Britain 1846–49, to Russia 1867, and to Germany 1868–74, when he asked to be recalled. While at Berlin he prepared the argument of the United States against Great Britain in the Northwestern boundary case, which had been referred to the king of Prussia. During the long period of his govt. employment, B. had his home residence in New York, and continued at intervals to prosecute his great historical work, of which Vol. III. appeared 1840; Vols. IV.–X., 1852–74; and Vols. XI. and XII., entitled *History of the Formation of the Constitution of the United States*, 1882. A revised edition (6 vols.) was issued in Boston 1876; and a final revised edition (6 vols.) New York 1884–5. The *History of the United States*, though adversely criticised on some points, holds high rank in Europe and America, and has been strongly commended by such authorities as Edward Everett, Prof. Heeren, William H. Prescott, George Ripley, Baron Bunsen, and Friedrich von Raumer. The work begins with the earliest colonization and ends with the history of the formation of the constitution.

In 1854 B. established himself in Washington, and thereafter passed his time either in that city, or at Newport, R. I., his summer residence. He delivered numerous lectures and orations on historical and other subjects, including *The Culture, the Support, and the Object of Art in a Republic; The Office, Appropriate Culture, and Duty of the Mechanic; Memorial Address on the Life and Character of Abraham Lincoln; A Plea for the Constitution of the United States, Wounded in the House of Its Guardians;* etc. B. contributed to the *American Cyclopædia* a biography of Jonathan Edwards: also papers to the *Collections of the New York Historical Soc.* B. delivered public orations on the occasions of the death of Dr. Channing, Andrew Jackson, William H. Prescott, and Washington Irving; nd at the unveiling, in Cleveland, O., of a statue of Oliver Hazard Perry. He also delivered an address, 1855, Oct.,

HON. GEORGE BANCROFT.

at the celebration of the battle of King's Mountain. His bodily and mental vigor remained scarcely impaired to extreme old age. He died in Washington, D. C.

BANCROFT, HUBERT HOWE: historian: b. Granville, O., 1832, May 5. He passed his early life on a farm, and had limited education. After serving in the book-store of his brother-in-law, George H. Derby, Buffalo, N. Y., he went to San Francisco, where, after many vicissitudes, he established 1856 the publishing house of H. H. Bancroft & Co., eventually the largest on the Pacific coast. Having formed a great collection of books, maps, and MSS. relating to the Pacific states, he determined to construct their history from these miscellaneous materials—a colossal undertaking which occupied him and his assistants 30 years, and resulted in the publication of 39 vols. at a cost of nearly $700,000. This work appeared at different times and under several titles, as follows: *The Native Races of the Pacific States; History of the Pacific States; Essays and Miscellanies; Literary Industries*, etc. In 1886, B. met with a personal loss by fire, which was estimated to amount to $500,000. His library of Pacific coast history and literature, stored in a fireproof building in San Francisco, comprises 50,000 vols., and is invaluable, owing to the impossibility of ever reproducing it.

BANCROFT, RICHARD, Abp. of Canterbury: 1544, Sep. —1610, Nov. 2; b. Farnsworth, Lancashire; son of John and of Mary niece of Hugh Curwyn, Abp. of Dublin. Educated at Cambridge, he took the degree of B.A. at Christ's College 1567, and that of M.A. at Jesus' College 1570. He was known as a bitter opponent of the Puritans. He became rector of Teversham, Cambridgeshire, 1576, of St. Andrews, Holborn, 1584, and treasurer of St. Paul's Cathedral 1585. In the latter year, he was admitted D.D. By the lord chancellor, Hatton, to whom he was chaplain, he was presented to the rectory of Cottingham, Northamptonshire. In 1587, he became a prebendary of Westminster, in 1589 of St. Paul's, and in 1594 of Canterbury. Consecrated Bp. of London, 1597, May 8, he attended Queen Elizabeth during her last illness. At the famous Hampton Court conference under James I., he was one of the chief commissioners on behalf of the Church of England, and took the lead in the disputations. In the convocation of 1603, 4, he sat as president. In 1604, Oct., he succeeded Whitgift as Abp. of Canterbury; and was sworn in one of his majesty's privy council, 1605, Sep., and chancellor of the University of Oxford, 1608. B. had a high character as a preacher and statesman; and was a vigilant ruler of the church. He is author of two sermons, one of which, preached at St. Paul's, 1589, contains a furious invective against the Puritans, and of two treatises respecting church order and discipline. B. left his library to his successors in the see of Canterbury for ever.—His nephew, JOHN, Bishop of Oxford, 1632 (died 1640), built the palace of Cuddesden for the bishops of that see. Burned by the parliament troops, 1644, it was rebuilt, 1679.

BAND, n. *bănd* [from the verb *to bind:* Goth. *bandi;* F. *bande;* It. *banda,* a strip, a band; Ger. *bande,* border, margin]: that with which anything is bound; a narrow strip, as of cloth, metal, or other material for tying, binding, or constricting something, or that simply encircles a thing; a strip or streak of different color or material; an encircling cord, fillet, or tie; in *acch.,* a comparatively low or flat molding, a narrow ornament carried horizontally along a wall, etc.; in *mech.,* a flexible belt or strap, especially an endless one of small size, as of leather or thin steel, for conveying motion between wheels by friction (compare BELT); in nautical use, a hoop around a mast or spar, also a strip of canvas across a sail; in mining, a layer or bed of rock between layers of coal; in bookbinding, a strip of cord, tape, etc., for holding together the sections of which a book is composed. Architectural B. often consist of foliage, quatrefoils, or of simple bricks. *B. of a shaft* is the molding or group of moldings by which pillars and shafts are encircled in Gothic architecture. Several B. are often placed at equal distances on the body of the shaft, when it is long, in which case they are known as shaft-rings: V. to join or tie with a band; unite; to make or form a band or stripe. BANDING, imp. BANDING-MACHINE, n. a mechanism for making bands for hats. BANDING-PLANE, n. a plane for grooving an architectural band or molding. BANDED, pp. BANDAGE, n. *ban'daj* [F.], a fillet; a swathe; a long narrow strip of cloth used in binding up a wound or an infirmity; see next page; in arch. and mech., a large constricting band, as about a dome or tower, to prevent the members from spreading. V. to tie up with a strip of cloth; to dress with a bandage. BAN'DAGING, imp. BANDAGED, pp. *băn'dājd.* BANDBOX, n. *bănd'bŏks,* a light paper box—so named from its original use of holding bands, later used to protect millinery. BAND-BRAKE, n. a brake, as of a vehicle, consisting of a thin metal band that nearly encircles a drum or the like connected with a driving gear. Tightening the band tends to stop the rotation of the drum. BAND-DRIVER, n. a bookbinder's tool for adjusting book-bands by forcing or driving. BAND-FISH, n. one with an elongated body; an oar-fish or ribbon-fish, of the genus *Cepola,* often remarkable for its beautiful coloring. BAND-NIPPERS, a. book-binder's nippers for grasping and drawing the leather of the back so that it may set tightly against the bands. BAND-PULLEY, n. a pulley-wheel for carrying a band. See belt-pulley. BAND-ROBIN, n. a stiff piece of cloth bound around the body of a hat to hold the brim. BAND-SAW, n. a long, thin saw-blade having its ends joined to form a band, so that it can be fitted over two large flat-faced wheels, and run rapidly, sawing always in one direction; also such a saw with the wheels and appurtenances, constituting a sawing-machine. The wheels are often four or five feet in diameter, and are rubber-surfaced, so that the band may not slip. The B. S. operates much faster than a common reciprocating saw

(often running 8000 ft. a minute), and wastes less wood in making the cut than does a circular saw, because it is practicable to use a much thinner blade with a B. S. Some are only 1-50th of an inch thick, and when the teeth are spread cut a kerf only 1-32d of an inch wide. The B. S. is a development of the jig-saw, which it has largely superseded. BAND-SETTER, n. a tool for cutting the end of a wooden wheel-hub, that it may receive a metal band. BAND-WHEEL, n. same as pulley-wheel; also one of the large wheels of a band-saw.

BAND, n. *bănd* [It. *banda;* F. *bande*, a band or company: It. *bandare*, to side: Sp. *banda*, a side or party: F. *bander*, to join in league with]: a company of men united for any common object or design; a body of soldiers; a body of musicians: military bands are musicians in each infantry, cavalry, and artillery regiment in the U. S. army: they are enlisted and trained as soldiers, and are under the direction of the adjutant: V. to unite together in confederacy; to associate. BAND'ING, imp. BAND'ED, pp. BAND'ER, n. one who. TRAIN-BANDS, *trān'-băndz*, regiments composed of citizens of a town, formerly drilled after the manner of the militia.—SYN. of 'band, n.': company; crew; gang; society; association.

BANDA, *băn'da:* chief town of a dist. in the N. W. Provinces; lat. 25° 28′ n., long. 80° 22′ e.; on the right bank of the Ken, an affluent of the Jumna, 95 m. to the s.w. of Allahabad, 560 to the n.w. of Calcutta, and 190 to the s.e. of Agra. It is a great mart for cotton. Pop. 29,000.

BAND'AGE: a long strip of cloth used by surgeons to apply pressure on a part, or to retain dressings upon wounds. The most common B. is a strip of linen, calico, or elastic web, from 3 to 5 or more inches in breadth, rolled longitudinally; hence the name *roller*. There are bandages for special purposes, as the four-tailed for the head or knee, which consists of a piece of cloth split up on each side towards and nearly to the centre. When applied, the tails are crossed and tied so as to make an extemporaneous night-cap. In applying the roller B. to a leg, the surgeon first turns it round the foot, then round the ankle and so by repeated turns, each one of which should overlap about a third of the previous one, till he reaches the calf of the leg, when he must fold at each turn the B. sharply back on itself, by which maneuver it will lie flat and smooth on the limb. The operator must remember that the B. must be applied more tightly at the foot than in the leg, so that it may not impede the course of the blood through the veins.

BAN'DA ISLES: a portion of the Moluccas, consisting of 10 islands, 50 m. to the s. of Ceram, lat. 4° 30′ s., long. 129° 50′ e. Area, only 17 sq. m. The Banda Isles are lofty and volcanic, attaining a maximum altitude of 1,745 ft. and having suffered greatly from earthquakes, of which the

most violent were in 1816 and 1852. Their chief production is the nutmeg. Like most of the islands in this neighborhood, they belong to the Dutch. Pop. about 6,500, 500 of whom are Europeans or half-breeds.

BANDAJAN': a pass over the Himalaya, forming the s. boundary of Kunawar. It is amid mountains of gneiss, and is covered with perpetual snow. The summit of the pass is 14,854 ft. above the sea, and is in n. lat. 31° 22', e. long. 78° 4'.

BANDANA, n. *băn-dăn'ă* [Sp. *bandaña*, a neckerchief; *banda*, a scarf, a ribbon]: a silk or cotton handkerchief, of Indian origin, now extensively made in Britain, usually of cotton. The cloth is first dyed turkey red, and then the pattern is made by discharging the color with bleaching liquor in a powerful Bramah press. The pattern to be discharged is cut out on two plates of such metal (lead) as may not be acted on by the liquor, and of the full size of the handkerchief. A dozen or more are put in at once between the plates, and so many of these courses are entered together as fill the press, when the pressure is applied, and the liquor is run in on the uppermost plate, which is grooved on the upper side to receive it, and holed to pass it from plate to plate through all the cloth-folds in the press. The pressure on the cloth, to make clean work by preventing the spreading of the liquor, is enormous. The patterns in the real B. style of printing are spots and diamond prints, the best suited for discharging, and even for these a pressure of 500 tons is required to work them clean. See CALICO PRINTING.

BAN'DA ORIEN'TAL: a state of South America. See: URUGUAY.

BANDEAU, n. *băn'dō* [F. a fillet, frontlet, diadem, tiara, architrave]: a narrow band or fillet around a cap or other head-dress.

BANDEL, *bân'dèl*, ERNST VON: 1800–76, Sep. 25; b. Anspach: eminent modern sculptor. While attending the academy at Munich, 1820, he sent to the exhibition a plaster figure of Mars reposing, large as life, which procured for him considerable reputation. His figure of Charity, executed in marble, occupied about ten years. It exhibits great chasteness of design, and a minute carefulness of execution. Among his best portrait busts (in which he excels) are those of Maximilian, king of Bavaria (1832), and of the artists D. Quaglio and Peter Hess. In 1834, he removed to Berlin, where his chief works were a colossal statue of Hermann (q.v.), the foundations of which were laid 1841, but which was not inaugurated till 1875; a life-size statue of Christ; a life-size statue of Hermann's wife; and a bust of the poet Grabbe. At Hanover, where he long resided, he executed for the theatre statues of Shakespeare and Goldoni; for Göttingen, one of William IV.

BANDELLO, *bân-dĕl'o*, MATTEO: abt. 1480–1561; b. Castelnuovo, Piedmont: Italian writer of *novelle* or tales.

In early life, he became a Dominican monk, in the Convent delle Grazie at Milan, but soon abandoned this vocation for a more free and independent life, and in Rome and Naples B. studied belles-lettres. He returned to Milan, whence he was driven by the Spaniards, as a partisan of France, after the battle of Pavia, 1525. He accompanied Francis I. to France, and was, 1550, made Bp. of Agen by Henry II. He left the care of his diocese to the Bp. of Grasse, and gave his time to the completion of his tales, pub. in Italian (3 vols. Lucca, 1554); a fourth vol. was added after his death. The tales of B. rank in Italy next to those of Boccaccio. They are distinguished by unaffected simplicity of style, fluency and vividness of narrative, and a harmonious brevity of peiods. But their moral tone is often impure.

BANDE NOIRE, *bănd nwar* ('Black Band'): societies of capitalists who, during the first French revolution, bought the confiscated buildings which had belonged to the church, emigrants, etc. The opprobrious name was fixed on them on account of their vandalism in the destruction of old relics, works of art, churches, convents, abbeys, episcopal residences, etc. It has, however, been alleged, that their minute subdivision into lots of the old territorial domains has benefited agriculture and ameliorated the condition of the people.

BANDEROLE, n. *băn'de-rōl*, or BAND'ROL, *bănd'rol*, or BAN'NEROL [F. *banderole*, a little flag or streamer—from Sp. *bandernola*]: a small streamer fixed immediately under the crook, on the top of the staff of a bishop's crosier (q.v.), and folding over the staff. In the *army*, the little flag attached to a trumpet.—Also in *arch.*, the flat inscribed band used in the Renaissance buildings, similar to those now used for mottoes to coats-of-arms.

Banderole.

BAND-FISH, or SNAKE-FISH (*Cepola*): genus of fishes of the Ribbon-fish (q.v.) family. The body is much elongated and compressed. The bones are little more solid than a mere fibrous net-work, and everything else exhibits a corresponding delicacy, so that specimens are seldom obtained uninjured. All the species inhabit quiet depths, and are incapable of contending with waves and currents. Their singular form, and the beauty of their colors, make them objects of great interest. One species, the Red B. (*C. rubescens*), common in the Mediterranean, is occasionally cast ashore by storms on the British coasts. It is about 15 inches long. Its brilliant apperance, when moving in the water, has suggested the names of Fire-flame and Red Ribbon, by which it is known at Nice.

BANDICOOT, *băn'dĭ-kôt* (*Perameles*): genus of marsupial (q.v.) quadrupeds, occupying in the zoology of Australia a place analogous to that of shrews (q.v.) and hedgehogs (q.v.) in Europe. Their dentition is remarkable, as they have ten cutting teeth in the upper jaw, and only six in the lower, the posterior ones of which are two-lobed: in other respects, it nearly resembles that of opossums. The have an elongated head and pointed muzzle, the hind-

legs are considerably longer than the fore-legs; the thumb and little toe of the fore-feet are little more than simple tubercles, so that there seem to be only three toes; and there is a fleshy tubercle in place of a thumb on the hind-feet. Their movements are similar to those of hares or rabbits. They live on bulbs, insects, etc., make ravages in potato-fields, and devour corn in granaries. There are

Bandicoot.

several species. The Long-nosed B. (*P. nasuta*) is about a foot and a half in length from the extremity of the nose to the origin of the tail; which is not unlike that of a large rat, but better covered with hair. It is chiefly found in the mountainous parts of New South Wales. *P. Gunnii* is common in Van Diemen's Land.

BANDICOOT, n. *băn'dĭ-kŏt* [*bandikut*, the native name], or BAN'DICOOT RAT, MALABAR' RAT, or PIG-RAT (*Mus giganteus*): the largest known species of rat. The name B. is a corruption of the Telinga *pandikoku*, literally signifying pig-rat. The animal inhabits many parts of India, and is plentiful in Ceylon. It is found chiefly in dry situations, and often in hilly districts. It attains the weight of two or three pounds, and is 24–30 inches long, including the tail, which at the base is 2½ inches in circumference. The body is thick, and greatly arched, black above, grayish below. Its flesh is a favorite article of food with the coolies of India, and is said to be delicate, and much to resemble young pork. It feeds chiefly on grain and roots, and is very destructive in gardens. 'Its nests, when rifled, are frequently found to contain considerable quantities of rice, stored up against the dry season.'—Sir J. E. Tennent's *Ceylon*.

BANDIERA, *bân-de-ā'râ*, ATTILIO and EMILIO: two brothers, descended from a distinguished family of Venice: lieutenants in the Austrian navy, in which their father was rear-admiral. In the year 1842, inspired with an enthusiasm for the freedom and unity of Italy, they entered into correspondence with Mazzini, whom they regarded as almost a demigod. Unfortunately they became impressed with the delusive idea that their native country could be saved by means of a conspiracy. Misled by false rumors of a rising in Naples, coming, it is thought, from the Neapolitan police,

they ventured to land with twenty companions at the mouth of the small river Nieto, in Calabria, believing that their appearance would be the signal for a general insurrection. The Neapolitan government expected them; and they were taken prisoners at once. Nothing ever transpired respecting the trial of these unfortunate men. Attilio and Emilio were shot with seven of their comrades in the public square of Cosenza, 1844, July 25. They died, exclaiming 'Viva l'Italia!' The fate of the brothers B. attracted much attention in England, from the fact that letters of M. Mazzini, then in London, had been opened in the post-office by authority of government, which was accused of giving such information to the Italian governments as enabled them to entrap the insurgents.

BANDINELLI, *bân-de-nĕl'ē*, BACCIO: 1487–1559 (or 60); b. and d. Florence; son of a famous goldsmith: one of the best sculptors of his time; pupil of Rustici, friend of Leonardo da Vinci. He is said to have been an angry and jealous rival of Michael Angelo, whose grandeur of conception he strove to equal, and who is said to have retaliated by contempt. All information of him, however, is from prejudiced sources. Benvenuto Cellini, whose language is generally passionate and hyperbolical, is his chief accuser, although Vasari also speaks of his proud and envious disposition. It is impossible to deny that, as a sculptor, he was in his day second only to Michael Angelo. He was patronized by Cosmo de' Medici, Charles V., Francis I., Clement VII., and other powerful friends. Clement even bestowed on him an estate.

His best works are bassi-rilievi, among which are those that adorn the choir of the Duomo at Florence. On the high-altar in the same building is to be seen his Corpse of Christ, supported by an angel, with God the Father over it. His most ambitious work is Hercules with Cacus at his feet. In the Medicean Gallery are his copies of the group of the Laocoon—a masterly imitation of the antique, in which he boasted that he excelled even the ancients themselves. He also executed statues of some of his patrons; all his works exhibit power, vigor, and skilful drawing, but it is alleged, apparently with truth, that 'he was too fond of the terrible graces of composition.'

BANDIT, n. *băn'dĭt*, BANDITTI, n. plu. *băn-dĭt'ē*, or BAN'DITS, n. plu. [It. *bandito*, one proclaimed or denounced —from It. and mid. L. *bandīrĕ*, to proclaim, to denounce —from mid L. *bannum*, a proclamation]: originally signifying a 'banished' or outlawed person; then one who, because outlawed, wages war against civilized society; and finally a highway robber. The banditi, or banditti, formed in Italy in earlier times, as it were, a separate community or guild, who submitted to their own stringent laws, carried on both open and secret war with civilized society, and kept up a certain romantic idea of honor. By means of severe measures against them and their abettors, adopted 1820 by the papal government, their haunts were broken up. Those who still occasionally disquiet the frontiers of

Naples are in general people settled on the spot, who regard robbery and murder as equally a branch of their trade with agriculture. Peter the Calabrian, one of the most famous B. chiefs in 1812, assumed the titles of 'Emperor of the Mountains, King of the Woods, and Lord of the Highroads from Florence to Naples.' The government of Ferdinand I. found themselves obliged to conclude treaties with him. The banditti must be distinguished from common robbers, called *Malviventi.* In later times the banditti were joined by adventurers of all kinds, to such an extent that the Austrian troops who occupied Naples were obliged to make frequent expeditions against them. In Sicily the banditti are most numerous in the Val Demone. They formerly had so much power there, that the Prince of Villafranca, as a piece of policy, declared himself their patron, and treated them with much confidence. In 1841–43, political fugitives united with robbers and adventurers of all kinds in the Abruzzi, Calabria, and Romagna, and since then they have never been entirely extirpated. The revolutions of 1848,9 added greatly to their numbers, and in several districts of Italy, especially in the States of the Church. between Ferrara and Ancona, they reached an unheard-of degree of boldness, notwithstanding the Austrian army of occupation. Under the command of one Bellino (known by the name of 'Il Passatore'), a man of daring and ability (d. 1851, March), they kept the country in terror, and even burned several villages. They also carried on a real guerrilla warfare against the military forces of the country. Recent events in Italy have it is said, recalled numbers of these banditti to a more honorable life. See CAMORRA. In Greece, organized banditti still make travel in some parts perilous.

BAN-DOG, n *băn-* [properly *band-dog,* one requiring to be held in leash or tied up]: a kind of large dog; a mastiff.

BANDOLINE, n. *băn'dō-lĭn* [a probable compound of Eng. *band* and *line:* L. *olĕum,* oil, or in the sense of a stiffener]: a mucilaginous preparation for stiffening the hair. The usual recipe for making B. is to boil Carrageen (q.v.) or Irish-moss with water till a thick mucilage is obtained, which is afterwards scented with *Eau de Cologne* or other perfumed spirit; a second process is to soak quince-seeds in cold water for a day or two, then strain, and add perfume; a third process is to heat gum tragacanth with water, and when a mucilage is obtained, add the scent.

BANDON, *băn'don,* or BAN'DONBRIDGE: town of the county of Cork, Ireland; on the Bandon, 12 m. s.w. from Cork, with which it is connected by a railway. The houses are of stone. There are several good streets, and numerous ecclesiastical and other public buildings. B. was originally peopled by a colony of English Protestants, and was so strictly Protestant, that till about the beginning of the present century, no Roman Catholic would have been allowed to settle in it. More than three-fourths of the population are now Rom. Cath., and there is a convent.

B. was at one time a prosperous manufacturing town, cotton-spinning and weaving being extensively carried on; but these branches of industry have been almost entirely relinquished. It returns one member to the house of commons. The country around B. is very beautiful, well wooded, undulating, and pastoral. Pop. (1871) 6,131; (1881) 5,949; (1891) 6,074.

The river Bandon rises in the Carberry mountains, and at its mouth forms the harbor of Kinsale. Spenser describes it as 'the pleasant Bandon, crowned by many a wood.' It has a course of 40 m., for 15 of which it is navigable, to Innishannon, four m. below Bandon.

BANDONG': commercial town on the w. coast of Java, in the vicinity of the volcano Gunong Guntour, by an eruption of which 80 villages were destroyed in 1822.

BANDORE, n. *băn'dōr* [Sp. *bandurria*—from Gr. *pandoura*, a musical instrument with three strings]: a stringed musical instrument like a lute.

BANDY, v. *băn'dĭ* [F. *bander*, to bind, to drive the ball from side to side at tennis—from Sp. *banda*, a side]: to beat to and fro, as a ball in play; to exchange; to retort in words; to give by turns; to contend: N. a bent club for striking a ball at play. BAN'DYING, imp. BANDIED, pp. *băn'dĭd*. BAN'DIER, n. *-dĭ-ĕr*, one who.

BANDY-LEGS, n. plu. *băn'dĭ-lĕgz* [OF *bander*, to bend; *bandé*, bent, as a bow by binding it with a band]: bent or bowed legs.

BANE, n. *bān* [AS. *bana*, murderer: Icel. *bana*, to slay; *bani*, death: OH. Ger. *bana*, death-blow]: a poison of a deadly quality; any fatal cause of mischief. BANEFUL, a. *bān'fŭl*, poisonous; pernicious. BANE'FULLY, ad. *-lĭ*. BANE'FULNESS, n. the quality of being poisonous. BANEWORT, n. *bān'wĕrt*, deadly nightshade. BANEBERRY, the wild poisonous plant, *Actæa spicātă*, ord. *Ranunculăcĕæ*, having a single succulent carpel, containing many ovules.—SYN. of 'bane': ruin; destruction; mischief; pest; injury; poison.

BANE'BERRY: see ACTÆA.

BANFF, *băm f:* capital of Banffshire, Scot.; a seaport in the n. of the county, on the left bank of the mouth of the Doveran, 45 m. by road, and 50 by rail, n.n.w. of Aberdeen. It has a higher or inland town, and a lower or sea town, on the Moray Firth. On a height between the towns are some remains of a royal castle, on the site of which is now a large house—the 'Castle.' To the e. of B. is Duff House, the seat of the earl of Fife, with a large park. The harbor is liable to be shoaled by sand. A seven-arched bridge over the Doveran unites B. with the seaport of Macduff, half a mile e., whose shipping trade is more extensive than that of B. The chief exports are corn, cattle, salmon, and herrings. Robert II., 1372, made B. a royal burgh. Abp. Sharp of St. Andrews was born here, 1613. Great destruction was wrought by a flood of the Doveran, 1829.

Pop. in B. (1871) 7,439; (1881) 7,871; in Macduff (1871) 3,407; (1881) 3,650; (1891) Banff, 3,876; Macduff, 3,722.

BANFFSHIRE, *băm'shēr:* county in the n.e. of Scotland, bounded n. by the Moray Firth; e., s.e., and s. by Aberdeenshire; w. by Elgin and Inverness shires; thirteenth among the Scotch counties in size, fourteenth in population. Its greatest length is abt. 59 m., its greatest breadth abt. 32—average 12; its extent of sea-coast abt. 31; estimated area, 646 sq. m. The surface, especially in the s. and s.e., is mountainous, interspersed with fertile valleys and fine pastures; but the surface near the coast is comparatively level. The chief mountain-ranges, rivers, and strike of the stratified rocks run from s.w. to n.e., and the whole county is an extensive slope in the same direction, from the Grampians to the Moray Firth, into which the rivers flow. The coast is rocky, but not high, except to the e. of Banff. The highest peaks are the North Cairngorm, 4,084 ft.; Ben-a-main, 3,874; Ben Rinnes, 2,755; Corryhabbie, 2,569; Knock, 1,409. Ben Macdhui, 4,296 ft., is partly in Banffshire. The chief rivers are the Spey, which bounds a third of the county on the w.; and the Doveran, 60 m. long, mostly within the county. Predominant rocks are granite, quartz rock, mica-slate, clay-slate, syenitic greenstone, graywacke, graywacke-slate, old red sandstone with fossil fishes, metamorphic limestone, and serpentine. The serpentine near Portsoy has long been famous as the 'Portsoy Marble.' Beryl and rock-crystal occur on Cairngorm. Lead, iron, antimony, and plumbago occur in small quantity. The soil in many parts is very fertile, and highly cultivated. In 1878, a third of the surface of B. was in crop, the chief crops being oats, turnips, and grass. The breeding of cattle is the chief object of the farmer. In 1881, B. had 8,074 horses, 41,952 cattle, 50,733 sheep, and 2,954 pigs. The chief manufactures of B. are weaving, bleaching, tanning, distilling, and artificial manures. Glenlivet whisky has long been celebrated. Chief exports are grain, meal, and cattle. There are twelve fishing towns and villages along the coast. Herring-fishery is extensively carried on. The salmon-fisheries of the Spey and Doveran are very valuable, the Spey ranking after the Tweed and Tay as a salmon-river. B. is divided into the districts of Enzie, Boyne, Strathisla, Strathdoveran, Balveny, Glenlivet, and Strathavon. Chief towns and villages are Banff, Macduff, Portsoy, Keith, Cullen, Buckie, Dufftown, and Tomantoul. There are 23 civil parishes in the county, and 81 places of worship (of which 33 belong to the Established church, and 24 to the Free church). Valued rental of B. (1885,6), £229,427. The parliamentary constituency in 1885,6 was 7,018. B. with the counties of Aberdeen and Elgin, enjoys the Dick bequest (q.v.) for parochial education. Two-thirds of B. belong to four landed proprietors. The county returns one member to parliament, and Banff and Cullen unite with Elgin, Inverury, Kintore, and Peterhead in returning another. B. contains numerous remains of antiquity, the most remarkable being the old churches of Gamrie and Mortlach. The

former, built 1010, and used for public worship till 1830, is called the 'Kirk of Skulls,' the bones of the Norsemen who fell on the neighboring field of Bloody Pots having been built into its walls. Mortlach was for a century the seat of a bishop, but David I., 1139, incorporated the see with that of Aberdeen. Pop. 61,439.

BANG, v. *băng* [Sw. and Icel. *bang*, a hammering, stir, tumult. Goth: *banja*, a blow, a bane; imitative of the sound of a blow]: to treat or handle roughly; to shut with a loud noise, as a door: N. a heavy blow; the thump or sound of a stroke. BANG'ING, imp. BANGED, pp. *băngd*.

BANG, *băng*, HERMANN JOACHIM: Danish novelist: b. 1857. He came into notice about 1879, since which time he has published a number of novels and some poems. *Hopeless Generations* (Haablose Slœgter); *Eccentric Tales* (Excentriske Noveller); *Under the Yoke* (Under Aaget); *Ten Years* (Ti Aar); and *By the Roadside* (Ved Veien), are the titles of some of them. The last named is considered the masterpiece.

BANGALORE, *băn-ga-lōr'*: fortified town of Mysore, in the dist. of Bangalore, 216 m. w. of Madras; terminus of the Mysore branch of the Madras railway. When Mysore was occupied by Britain, 1831, B. was made the administrative capital of the state. (Mysore was restored to native rule 1881.) B. has manufactures of silk, cotton, and carpets; also of gold, silver, lace, electro-plate, and leather. Trade is brisk and the markets lively. At B., which is 3,000 ft. above the sea, the thermometer rose only twice above 90° in six years. B. was a favorite residence of Hyder Ali; and 1791, it was stormed by the British under Lord Cornwallis. Pop. about 160,000.

BANGKOK, *băn-kŏk'*: cap. of Siam; on the banks of the Meinam, about 20 m. from its mouth, in the Gulf of Siam: lat. 13° 38′ n., long. 100° 34′ e. About half the people are Chinese, in whose hands is centred nearly all the trade of B., which is large. For their right to trade here, the Chinese pay a poll-tax of about three dollars on entering the kingdom, and a similar sum is collected from them every three years. The payment of this tax exempts them from the half-yearly servitude which all other oriental strangers resident in Siam are required to give. The approach to B. by the Meinam, which can be navigated by ships of 200–300 tons, is exceedingly beautiful, the banks being skirted by fine trees full of gay birds. As the town is neared, numerous temples present themselves, and floating houses are frequent; and finally, the whole city with its rich gardens, and shining temples and palaces, bursts full upon the view. A large number of the houses float on rafts, and can be transferred from one place to another. There are a few houses in the city built of brick and stone, but the greater part are of wood. There are usually in each house a division for males and one for females. The land-houses are raised upon piles, 6 or 8 ft.

from the ground, and are reached by rude ladders—the daily flow of the tides and the annual inundations rendering this plan necessary. The floating houses are made of bamboo boards, wicker-work, or palm-leaves, and have generally a veranda in front, with a small wing at each end. The circumference of the walls of B., which are 15 ft. high and 12 broad, is said to be 6 m. The internal traffic is carried on chiefly by means of canals, there being only a few passable streets. Horses and carriages are rarely seen except in the neighborhood of the palaces. The chief interest of the kingdom of Siam, according to Sir John Bowring, concentrates itself in Bangkok. The palace of the first king is surrounded by high walls, and is nearly a mile in circumference. It includes temples, public articles in gold, silver, and precious stones. The temples of B. are innumerable, and decorated in the most gorgeous style, the Siamese taking a pride in lavishing their wealth on them. Some of them, according to the Catholic bishop Pallegoix, have cost more than 4,000,000 francs ($800,000). In the neighborhood of B. are iron-mines and forests of teak. Chief exports are sugar, pepper, cardamoms, ivory, feathers, hides, fine woods, rice, salt, and fish. The total exports were valued at $15,000,000; the imports at $12,000,000. The imports are tea, manufactured silks, and piece-goods, opium, hardware, machinery, and glass wares. In 1900, 450 vessels of 378,073 tons cleared the port. Pop. about 500,000.

BANGLES, n. *băng glz*, ornaments worn on the arms and ankles in India and Africa. BAN'GLE-EAR, a loose hanging ear; a defective ear in a horse.

BANGOR, *băn'gawr:* city and port of entry, cap. of Penobscot co., Me.; on the w. side of the Penobscot river at the head of navigation, 60 m. from the sea, 246 m. from Boston, 136 m. n.e. from Portland by the Maine Central R. R. It is one of the principal cities in Maine, being built on the site of what was Fort Norumbega, erected 1658 by the French. There is a tradition alluded to in Burton's *Anatomy of Melancholy* and Milton's *Paradise Lost*, that there was once a great city of that name situated on this spot. Under the English government, in 1769, the place was called Kenduskeag. It eventually received its present name from a well-known psalm tune which chanced to be a favorite with Seth Noble, minister of the place at the time. B. was incorporated as a city, 1834. Its excellent railroad facilities and its situation on a navigable river, with abundant water-power have made it prominent in manufactures. B. has a large and accessible harbor and the rivers Penobscot and Kenduskeag are extensively bridged.

The city has a commanding position, with a charming view of the Penobscot and of an extensive country. The streets are broad and beautifully shaded, and the public and private buildings attractive. B. contains a fine custom house and post-office building, more than 15 churches, many fine public school buildings, one of the finest opera-houses in New England, a public library (50,000 vols.), Y. M. C. A. building, board of trade, Bangor Theo. Seminary (q. v.), the Eastern Maine General Hospital, the Eastern Maine Insane Hospital. Its industries include lumber, paper, trunks, iron foundry products, furniture, boots and shoes, carriages and sleighs, planing- mill products. The trade of B. is valuable and increasing, principal in importance being the lumber business, which is larger than in any other city in the U. S. except Chicago and Buffalo. Nearly 3,000 vessels are employed in freighting timber, etc., besides the shipping engaged in foreign commerce and the fisheries. The value of the imports is over $350,000, exports $5,500,000. Steamboats run between B. and the ports of Portland and Boston. B. has several banks (national and savings), 2 loan associations, 2 marine insurance companies, several daily, weekly and monthly publications. The city owns its water-works and its municipal lighting plant. The assessed property valuation of B. is over $16,000,000 with a debt of less than $1,000,000. Pop. (1910) 24,803.

Bangor Theological Seminary, chartered by the Legislature of Massachusetts, 1814, Feb., opened at Hampden, Me., 1816, Oct., removed in 1819 to Bangor and graduated its first class 1820, Aug. 2. The seminary has graduated nearly 1,000 students and given a partial course to 300 others. It has liberal endowments, a library of 25,000 vols. and is open to Christians of every denomination.

BANGOR, *băn'ger:* an episcopal city, borough, and seaport town, in the n. w. of Caernarvonshire, N. Wales, on the s. e. bank of the Menai strait, 2½ m. from the Britannia Bridge, and 59½ w. of Chester. It consists chiefly of a narrow crooked street, a mile long, stretching s. w. through a narrow fertile valley bounded on the s. by steep precipices. Its chief trade is derived from the great slate-quarries of Llandegai, 6 m. distant, employing 2,000 men. The slates are exported to all parts of the world, and also manufactured at B. into tables, chimney-pieces, etc. B. is a place of great antiquity. In 525, St. Deiniol founded a college here. It was raised to a bishopric 550, the founder being the first diocesan. The cathedral founded by him was destroyed by the Saxons 1071, rebuilt 1102, and again destroyed by fire 1402. The present edifice, built between 1496 and 1532, is a plain embattled cruciform structure, 214 by 60 ft., with a pinnacled tower 60 ft. high. Several Welsh princes and distinguished ecclesiastics are buried here. B. bishopric is the oldest in Wales. B. was chosen 1883 as the site of the University College of N. Wales. Pop. 11,500.

BANGOR, *ban'gawr:* small seaport town in the n.e. of county Down, Ireland; on the s. side of the entrance to Belfast Lough, 12 m. e.n.e. of Belfast. Steamers ply daily during the summer between B. and Belfast. Cattle and provisions are exported. Lead is found at Conlig in the neighborhood. B. is a favorite watering-place of the middle classes of Belfast. St. Cungall, 555, founded Bangor Abbey ('Ban-choir,' the 'White Choir,' whence the name Bangor). From this abbey, Alfred was said to have selected professors for his University of Oxford. In the 9th c. is had 3,000 inmates. Pop. 3,834.

BANGOR'IAN CON'TROVERSY: a long debate concerning the constitution of the church, excited by a sermon preached by Dr. Benjamin Hoadley, Bp. of Bangor, before George I., 1717, March 31. The sermon was attacked by the advocates of ecclesiastical authority. See HOADLEY, BENJAMIN.

BANGOR THEOLOGICAL SEMINARY (Congregational). It sprang from the Society for Promoting Theological Education, organized in 1810, and chartered in 1812. The seminary was chartered by the legislature of Massachusetts (of which Maine was then a part) 1814, February; was opened at Hampden, Me., 1816, October; but in 1819 was removed to Bangor and graduated its first class, 1820, Aug. 2. It was at first conducted on the English plan, but a few years later remodeled its courses to suit American needs. Organized to supply the churches of Maine with educated pastors, it has furnished over half their number ever since and does so still. Up to 1903 it had graduated 808 students and given partial course to 255 others. It has endowments which furnish aid to all needy students, and a library of 23,500 volumes, and in 1903 had six professors and 23 students.

BANGRA, n. [Mahratta, *bhang*, hemp]: coarse hempen cloth made in north India.

BANGS, *băngz*, ISAAC SPARROW: American soldier: b. Canaan, Me., 1831, March 17; d. 1903. He entered the Union service as a private, 1862, Aug. 9; became captain in the 20th Maine infantry, 1862, August; lieutenant-colonel of colored troops, 1863, February; colonel of the 10th U. S. colored heavy artillery, 1863, November, until honorably discharged 1864, July 19. He took part in the Maryland campaign of September and October, 1862, and was present at the battles of Antietam, Shepardstown Ford, and Fredericksburg; was with the expedition to Ellis and Richard's fords, and served through Burnside's second campaign. Later he was at the siege of Port Hudson, La., and commanded the defense of New Orleans. For his meritorious services he was brevetted brigadier-general of volunteers, 1865, March 13.

BANGS, JOHN KENDRICK: American humorist and editor: b. Yonkers, N. Y., 1862, May 27. He was one of the founders of *Life* and has long been famed for his light

verse and humorous stories, among which may be mentioned *Coffee and Repartee* (1886); *New Waggings of Old Tales*, with F. D. Sherman (1887); *The Idiot* (1895); *Mr. Bonaparte of Corsica* (1895); *Water Ghost, and Other Stories, The Mantel-Piece Minstrels, The Bicyclers and Other Farces; A Houseboat on the Styx*, and *A Rebellious Heroine* (1896); *The Pursuit of the Houseboat* (1897); *Enchanted Typewriter* (1899); and *Uncle Sam, Trustee* (1902). He became editor of *Harper's Weekly* in 1900, of the *Metropolitan Magazine* in 1903, and of *Puck* in 1904.

BANGS, Lemuel Bolton: American physician: b. New York, 1842, Aug. 9. He was graduated at the College of Physicians and Surgeons in 1872; was professor of genito-urinary diseases in the Post-Graduate Medical School and Hospital of New York, and later at Bellevue Hospital Medical College; and was consulting surgeon to a number of hospitals in New York. He was president of the American Association of Genito-Urinary Surgeons (1895), and the editor of the *American Text-Book of Genito-Urinary Diseases*, etc.

BANGS, Nathan: clergyman and author: b. Stratford, Conn., 1778, May 2; d. New York, 1862, May 3. He entered the Methodist ministry in 1801. In 1820 he became head of the Methodist Book Concern, which he reorganized thoroughly, paying off its debts, extending its business, and putting it on a paying basis. He was also charged with the censorship of all its publications. He edited the *Christian Advocate* and the *Methodist Magazine;* was a founder and secretary of the Methodist Missionary Society; president of Wesleyan University, Middletown, Conn., in 1841; and in pastoral work from 1842 until his retirement in 1852. His chief work was *A History of the Methodist Episcopal Church*, 1776–1840 (4 vols. 1839–42); others are: *Errors of Hopkinsianism* (1815); *Predestination Examined* (1817); *Original Church of Christ* (1836); *State and Responsibilities of the Methodist Episcopal Church* (1850). Compare his life by A. Stevens (1863).

BANGUE, Bang, or Bhang, n. *băng* [Sks. *bhangga*, hemp: F. and Sp. *bangue*]: the prepared leaf of Indian hemp, used as a stimulant in the East. See Hemp, Indian.

BANGWEOLO, *băng-wē-ō'lō*, called also Bemba, *bĕm'bâ:* a great central African lake, discovered by Livingstone 1868; 150 m. long, 75 wide; 3,700 ft. above the sea. The Chambeze, which flows into it, and the Luapula, which issues from it, constitute the head-stream of the Congo. The shores are flat, and parts of the lake are mere marsh. On its s. shore Livingstone died.

BANIAN, or Bannian, *băn'yăn*, or *băn-yan'* [Sks. *banij*, a merchant]: a word used in India to designate a merchant or trader generally. It is more particularly applied to the great merchants in the w. of India, especially in the seaport towns of Bombay, Surat, Cambay, etc., who carry on a very extensive trade by caravans with the in-

terior of Asia, even to the borders of Russia and China. Contrary to the general custom of the Indian people, these Hindu merchants travel much, and the establishments and counting-houses of Indian Banians are to be found in almost every commercial town of any note in Asia. The Banians form a class or division of the caste (q.v.) of the Vaisya, adopt a peculiar costume, are believers in the transmigration of souls, and are strict in the observance of fasts and in abstaining from the use of flesh.

BAN'IAN DAYS: sailor's phrase, nearly equivalent to the *jours maigres* of the French, denoting the days in which, by a custom in the British navy no longer observed, no meat was served out to a ship's crew. The term was derived from the Hindu Banians, who were vegetarians.

BAN'IAN-TREE: see BANYAN.

BANIM, *bā'nĭm*, JOHN; 1800–42, Aug. 1: celebrated Irish novelist. He showed vigorous grasp and vivid fancy, in a series of pictures of life, delineating the peculiarities of the Irish character. B. dwells too much on the horrible; his descriptions are sometimes tiresome in minuteness; his imitation of Scott is frequently palpable. He failed in portraying the manners and frivolities of the higher classes; but he succeeded above all others in depicting the Irish peasant, with his picturesque peculiarities, in his sufferings and his errors. His *Tales of the O'Hara Family* (London 1825) were followed, 1826, by a second series, of which several were translated into German by Lindau. Next appeared *The Battle of the Boyne*, *The Croppy* (1828), *The Denounced* (1830), *The Smuggler* (1831), *The Mayor of Windgap*, *Father Connell*, etc. In 1837, general sympathy having been attracted towards B.'s privations, occasioned by disease that precluded all literary exertion, a pension of £150 per annum from the civil list was awarded him by government, which was afterwards further increased by £40 for the education of his daughter, an only child. He died in poverty at Windgap Cottage, near Kilkenny.

BANISH, v. *băn'ĭsh* [F. *bannir*, to banish; *bannissant*, banishing—from mid. L. *bannīrĕ*, to proclaim; to denounce (see BAN and BANDIT)]: to proclaim under the ban; to condemn to exile; to compel to leave a country; to send as a prisoner to a colony. BAN'ISHING, imp. BANISHED, pp. *băn'ĭsht*. BAN'ISHMENT, n. the state of being sent out of a country as a criminal; a driving away; formerly a penalty in English and Scotch law, now no longer known except in the sense of transportation (q.v.): see also PENAL SERVITUDE. —SYN. of 'banish': to exile; expel; transport.

BANISTER, n. *băn'ĭs-tĕr:* corrupted from BALUSTER, which see.

BANISTERIA, n. *băn-ĭs-tĕr'ĭ-a* [after *John Banister*, who lost his life searching for plants in Virginia]: genus of plants belonging to order *Malpighiaceæ*, and tribe *Banistereæ*. The species are evergreen twiners and climbers, with fine leaves and flowers; natives of America.

BANJERMASSIN, *bân-jĕr-mâs′ĭn:* a large kingdom on the s.e. of Borneo; 5,880 sq. m. Since 1860, it is governed by the Dutch Resident for the s. and e. of Borneo, who has an assistant at Martapura, where the sultans formerly lived. B. is watered by large rivers and intersected by a chain of mountains, in several parts rising to 3,000 ft. Excellent small arms are manufactured. The products are pepper, wax, edible nests, rattans, benzoin, dragons' blood, coal, iron, diamonds, and gold dust. Pop. of the kingdom, abt. 150,000, chiefly Mohammedans.

B., capital of the residency, is built on the island Tatas, about 12 m. from the mouth of the Banjermassin or Barito; pop. 35,000. Owing to the marshy ground and frequent inundations of the river the houses are built on piles, and many of them on rafts, the front next the river being used as a shop or stall on which wares are exposed for sale. On market days the water is covered with skiffs, having a single individual in each, moving about selling vegetables, etc. The people are continually on the river, all necessaries being purchased at these floating markets, and all business being done on the water. In every respect it is a floating town, possessing neither carriages nor horses; the only animals kept being pigs, goats, ducks, geese, and fowls. The houses of the European functionaries, the government buildings, and the fort, are built partly of stone and partly of wood. The fort Tatas is surrounded with palisades, and contains the resident's house, the magazines, and barracks. Exports are pepper, benzoin, bezoar, ratans, dragon's blood, birds' nests, iron, and straw mats very artistically made, and the imports are piece-goods, gunpowder, rice, sugar, Chinese porcelain, silks, and a few horses from Java.

BANJO, n. *băn′jō* [corruption of BANDORE, which see]: a favorite musical instrument of the negroes, having five strings, a head and neck, like the guitar, and a body of a tambourine shape, played with the fingers and hands. It is played by stopping the strings with the fingers of the left hand and twitching or striking them with the fingers of the right. The upper or octave string, however, is never stopped. It has long been the favorite musical instrument of the negroes of the southern United States and has also become widely popular in other sections of the country, but is most widely known and used as an accompanying instrument for negro melodies.

BANJOEMAS, *bân-yô-mâs′:* town of Java, 22 m. from the s. coast; s. lat. 7° 33′ 45″, e. long. 109° 19′ 20″. It is at the opening of an extensive and fruitful valley on the left bank of the Serajo. It is well built, and carries on a considerable trade. Pop. 9,000. B. is the residence of a Dutch governor, and has a fort and garrison. It is capital of a province of the same name, which produces coffee, sugar, indigo, rice, tobacco, etc. Pop. of town, 9,000.

BANK, n. *băngk* [F. *banc;* Ger. *bank,* a bench, a bank: It. *banco,* a bench, a merchant's place of business]: a mound or ridge on earth; any steep ascent; a heap of anything; a place where a collection of money is deposited; the margin of a river or the sea: V. to raise up a mound of earth or a dike to inclose; to deposit money in a bank. BANK'ING, imp.: ADJ. pertaining to a bank. BANKED, pp. *băngkt.* BANK'ER, n. one who deals in money or whose business is banking; a stone bench on which masons place the block of stone on which they are operating; a bench used in bricklaying for preparing the bricks for gauged work. BANK'ING, n. the business or employment of a bank for money: ADJ. of or relating to the business of banking. BANK'ABLE, a. *-ă-bl,* receivable at a bank. BANK-BILLS, promissory notes or bills of exchange issued by a bank. BANK-BOOK, a book in which the cashier or clerk enters the debt or credit of a customer. BANK-NOTES, engraved pictorial forms, on specially prepared paper, and duly signed by the bank authorities, representing various values up from one to five pounds, to a thousand or more, made payable on demand in gold. BANK-STOCK, shares in the trading capital of a bank. BANKERS' CLEARING-HOUSE: see under CLEAR. BANK'ET [F. *banquette*]: wooden bench on which bricks are cut.

BANK—BANKING: an establishment for receiving on deposit, issuing, lending, changing, or transmitting money —the business of dealing in money. A banker lends money at interest, usually for short periods on satisfactory security, and receives money on deposit, for which he sometimes allows interest, and sometimes without interest, merely keeps it safely for the depositor. In former times some banks were simply custodians of coin and bullion lodged with them, for which they granted receipts transferable from hand to hand, entitling the owners to get back the gold or silver, in coin or bullion as originally deposited. But money lying in such banks was unproductive, and indeed entailed upon the owners considerable charges to pay the necessary expenses of management. In recent times the competition for money by borrowers has become so keen, and the outlets for lending it safely so numerous, that banks of this class exist no longer, and the business of receiving money is now universally combined with that of lending it out. A banker, therefore, does not hoard all the money deposited with him; he gives out the greater portion on loan. The advantages accruing to society from the operations of banking are thus immensely increased. By receiving deposits of money, and massing in sums efficient for extensive enterprises the smaller savings of individuals, the banks are the means of keeping fully and constantly employed a large portion of the capital of the community which, but for their agency, would be unproductive; they are the means by which the surplus capital of one part of a country is transferred to another; where it may be advantageously employed in stimulating industry; they enable vast and numerous money transac-

tions to be carried on without the intervention of coin or notes at all, thus obviating trouble, risk and expense.

In relation to his depositors the banker occupies the position of debtor to creditor, holding money which the customer may demand at any time in whole or in part by means of a check payable at sight on presentation during banking hours. For the refusal to cash a check from the erroneous supposition that he has no funds of his customer's in his hands, or for misleading statements respecting the position in which the bank stands, the banker is legally responsible. Moreover, the law regards him as bound to know his customer's signature, and the loss falls upon him in event of his cashing a forged check. The services that a banker thus performs as a cash-keeper for his depositors are very great. Not only is the secure place of deposit supplied, which otherwise would be wanting, but the bank practically insures the safety of the funds committed to it: if in any way loss is sustained by robbery or fire or by some other cause, the bank is bound to make good the loss, and this regardless of the fact that the depositor may not be a profitable customer, as many dealers are not. In fact, the number of depositors who simply use a bank as a convenience, whose deposits are not large and whose multiplicity of small checks are a trouble, as they are the despair of the individual bookkeeper, is legion. Nevertheless the bank takes such accounts, holds the money subject to innumerable little drafts which are made good by new deposits equally numerous and small; and thus the active little account is maintained from year to year, often only a source of trouble and expense to the bank, which actually receives no adequate return for its services as warden and agent. Occasions are always occurring for withdrawing deposits, as well as making them. Traders and commercial men, for example, day by day, deposit with their bankers the drawings or sums of money which they receive in the course of their business; and, on the other hand, day by day, draw out such sums as they require to pay away in purchases of goods, in wages, rent, and other expenditure. A bank, therefore, while continually receiving deposits is continually repaying deposits; and the amount uncalled for is subject to daily fluctuation. At one period of the year, or in a certain condition of trade, the amount of deposits may be high; at another, low. As it is a principle at the very root of banking, that money deposited shall be returned, either on demand, or punctually at the expiry of a stipulated notice, it follows that banks must always have in their coffers as much of the money deposited with them as there is the least likelihood of being called for by depositors. When business is in its ordinary condition, a bank can, after some experience, approximate closely to the amount of the greatest demand for a return of deposits throughout the year, and provide accordingly. But sometimes the credit of a bank becomes doubted, either from causes peculiar to itself, or on occasions of a *panic* or general distrust, when all who own

money wish to have it in their own possession. In these cases, there is a *run* on the bank for repayment of its deposits, and the amount called for may be far beyond the maximum demanded in ordinary times. If the bank has not retained as much of the deposits in its coffers as meet the demand, it is said to *suspend payment*, and, as a general rule, it must wind-up its business; the confidence of the public that it will in future restore its deposits on demand being now destroyed. There are two prime rules in safe banking: the one is, that the bank shall lend its deposits only on undoubted and readily negotiable securities, however low the profit; and the other is, that the bank shall retain a sufficient amount of its resources—and this is called the *reserve*—to meet the possible demands of the depositors, even in cases of a run, although there may be no reason to expect one; for when a run comes, it seldom casts its shadow before. But it is evident that the greater the *reserve* of a bank, the less the amount of deposits which it can lend out and draw interest for; hence the temptation which banks lie under of imprudently lending out a too great proportion of their deposits—thus precipitating failure.

Banks make their loans chiefly in the form of *discounts;* that is, upon bills of exchange. Commodities in the wholesale market are generally sold on credit. The buyer promises to pay the amount at a certain date to the seller, and his promise is contained in a bill of exchange. The seller transfers it to a bank, which, on the faith of it, advances the amount in loan to him, less *discount* (q.v.), that is, interest of the money till the bill be due. This is called *discounting.* But banks lend on other securities. A holder of government stock, for example, will obtain a loan on the security of his stock; the banker being entitled to sell it, and repay the loan from the price, if the borrower fail to make punctual payment. So also, the holder of stock or shares in any public company, as a railway company, or of a debenture or bond due by such, can, where the company is believed to be in a sound condition, or the security is salable, obtain a loan from a bank. The owners of commodities lying in a public warehouse may obtain a loan on depositing with the bank the *warrants* or certificates of ownership. Loans, too, are occasionally made for short periods on the mere note of hand of the borrower, when the banker is satisfied of the ability of the borrower to repay the money. Where a banker finds the security which he has received to be insufficient, and repayment of the loan is not forthcoming, he will, of course, like any other trader, to avoid making a bad debt, take any other security the debtor can give him—such as a manufactory or a mine. Banks have in this way frequently become involved in manufacturing transactions, in their attempts to make more money of the securities than they would have done by an immediate sale of them and have often suffered great losses in consequence. And it is not to be supposed that banks always abstain from making

loans when the security is known to be doubtful; far from it: banks, like other commercial establishments, are, on many occasions, recklessly managed. In trying to push business, they may make loans on insufficient security, and banks are under strong temptation, to which they frequently yield, when a trader largely indebted to them is approaching bankruptcy, to sustain his credit by additional advances, in the hope that he may retrieve his affairs, and pay in full both the old and the new advances. The result is often the loss of both.

Bankers perform another very important function: they *remit* money from one place to another. A debtor in one city makes a payment to his creditor in another city in this way: he pays the money to a banker in his own city, who, for a small charge, called the *exchange*, gives him a draft for the amount on a banker, his correspondent, in the other city. The debtor transmits the draft to his creditor, who presents it to the banker in the other city, and receives the money from him. No actual transmission of the money, however, takes place, for there are debtors in the other city requiring to pay money to creditors in the first city, and these debtors effect the payment by giving the money to the banker in the other city, and obtaining his drafts on the banker in the first city. The one set of drafts are thus set off against the other. Not only may remittances between two places be thus made without the use of money, but the payments in both places may also be made without it. The debtors may pay for the drafts by checks on the banker who grants them, and the creditors may receive the money by drawing checks on the banker by whom the drafts are made payable.

The large amount of money transactions without the intervention of coin or bank-notes is inconceivable to those not in business. The manner in which these transactions may be effected without money, would be at once apprehended, if all persons in the same locality dealt with the same bank, and if all the banks scattered throughout the country were only branches of the same establishment. But in practice, matters are so managed as if this were the case. The checks, bills, or other drafts which come into the hands of a banker, drawn on (that is, payable by) other bankers, are set off and liquidated by drafts, which they have received, drawn on him. The balance or difference only is paid in money. In London, New York and other centres, there is an establishment called the Clearing-house (q.v.) of which most of the local banks are members. There, at a fixed hour daily, attendance is given by a clerk from each of these banks, who presents all the drafts immediately payable which his bank holds on the others; the balance or difference, on the whole, for or against each bank is ascertained; and the bank which holds a less amount of drafts on others than they hold on it, pays the difference by certificates of some bank designated for that purpose.

Many banks in all countries are not only banks of deposit

and loan, but banks of issue as well. Banks of deposit make loans both from their capital and from deposits. If from capital, the banker has no greater profit by the transaction than if he had lent out his money in any other way, equally safe, and involving the same amount of trouble. If from deposits, the interest which he receives, so far as it exceeds the interest, if any, paid to the depositors, and a ratable proportion of the expense of carrying on the business of the bank, is pure gain to him. But a banker may give the loan from his own notes, and in that case his gain is still greater. A bank-note is simply a written promise by the bank issuing it, to pay to the bearer, on demand, a sum of money—that is, in coin of the realm. Of course, the borrower would not accept a loan from a bank in its own notes, unless he believed that it could redeem its promise of paying in coin, and that the public were of the same opinion; for the moment that a suspicion arises that the promise will not be made good, the note will cease to pass from hand to hand as coin, or to perform all the functions which coin performs. But when the loan is accepted in a bank's own notes, it is evident that the interest which the bank draws for the loan of its promises to pay is pure profit, except the ratable proportion—as in the other cases—of the expense of carrying on its business, and the expense of the paper and printing of the notes with the government stamp-duty. In other words, a bank which can get people to pay to it interest for the loan of its promises to pay, draws the same income—barring the comparatively trifling expense of manufacturing the written promises—as a bank does which has to provide itself with gold for making its loans. The motive which a bank has to extend its issues on loans is therefore apparent, so long, of course, as it is not compulsory on it to retain unemployed in its coffers as much in gold as it issues in notes.

But it does not follow that when a bank makes a loan in its own notes for a definite period, it will really obtain the benefit of the whole of the interest on it for that period; for the borrower does not apply for the notes that he may keep them beside him, but that he may pay them away in making a purchase, or in liquidating a debt, and this, most commonly, on the very day he receives them. If the person to whom the notes are thus paid by the borrower has himself no purchase to pay for, or no payment to make, he may, the moment he gets them, return them to the bank that issued them, to lie there on deposit. If the bank pays interest on deposits, as some banks do, then out of the interest drawn by it on the original loan, it will have to pay interest to the depositor of the notes; in other words, the loan is no longer a loan of its notes, but a loan from its deposits. Or, the person receiving the notes from the borrower may immediately present them to the issuing bank for coin, instead of depositing them. Here, too, therefore, the loan that was made in notes is now converted into a loan of coin, that was in reserve from previous de-

posits, or that was part of the bank's own capital; in which cases, the bank obtains no advantage whatever in having made the loan originally in its notes. It might equally well, so far as profit is concerned, have originally made it in gold from its reserve of deposits or capital. Notes generally find their way back to the bank that issued them through other banks, into which they have been paid as deposits, or for the liquidation of debts due to them. These banks suffer the loss of profit or interest on the amount of the notes thus received by them so long as they keep them; they therefore immediately present them to the issuing bank for gold, to replenish their own reserves, or to lend out; or, what is the same thing, they present them to the issuing bank for government stock, or other securities bearing interest, and which that bank has had to provide from its capital and deposits. There are two checks which prevent a bank issuing notes to any extent it pleases; in the first place there must be a demand for its notes by borrowers; and in the second place the immediate return of the notes, chiefly through other banks for gold or for other portions of the reserve of the issuing bank, is a check to its issuing more notes than it has reserve to meet.

History.—Although banking operations on a considerable scale appear to have been conducted by the ancients, modern banking must be regarded as having had an independent origin in the reviving civilization of the Middle Ages. In the 12th century almost the whole trade of Europe was in the hands of the Italian cities, and in these the need of bankers was first felt. The earliest public bank, that of Venice, established in 1171, and existing down to the dissolution of the republic in 1797, was for some time a bank of deposit only, the government being responsible for the deposits, and the whole capital being in effect a public loan. In the early periods of the operations of this bank deposits could not be withdrawn, but the depositor had a credit at the bank to the amount deposited, this credit being transferable to another person in place of money payment. Subsequently deposits were allowed to be withdrawn, the original system proving inconvenient outside the Venetian boundaries. It was, however, less from the Bank of Venice than from the Florentine bankers of the 13th and 14th centuries that modern banking especially dates, the magnitude of their operations being indicated by the fact that between 1430 and 1433, 76 bankers of Florence issued on loan nearly 5,000,000 gold florins. The Bank of St. George at Genoa also furnished a striking chapter in financial history. The important Bank of Amsterdam, taken by Adam Smith as a type of the older banks, was established in 1609, and owed its origin to the fluctuation and uncertainty induced by the clipped and worn currency. The object of the institution (established under guarantee of the city) was to give a certain and unquestionable value to a bill on Amsterdam; and for this purpose the various coins were received in

deposit at the bank at their real value in standard coin, less a small charge for recoinage and expense of management. For the amount deposited a credit was opened on the books of the bank, by the transfer of which payments could be made, this so-called bank money being of uniform value as representing money at the mint standard. It bore, therefore, an *agio* or premium above the worn coin currency, and it was legally compulsory to make all payments of 600 guilders and upward in bank money. The deposits were supposed to remain in the coffers of the bank, but were secretly traded with in the 18th century till the collapse of the bank in 1790. Banks of similar character were established at Nuremberg and other towns, the most important being the Bank of Hamburg, founded in 1619. In England there was no corresponding institution, the London merchants being in the habit of lodging their money at the Mint in the Tower, until Charles I. appropriated the whole of it (£200,000) in 1640. Thenceforth they lodged it with the goldsmiths, who began to do banking business in a small way, encouraging deposits by allowing interest (4d. a day) for their use, lending money for short periods, discounting bills, etc. The bank-note was first invented and issued in 1690 by the Bank of Sweden, founded by Palmstruck in 1688, and one of the most successful of banking establishments. About the same time the banks of England and Scotland began to take shape, opening up a new era in the financing of commerce and industry.

The Bank of England, the most important banking establishment in the world, was projected by William Paterson, afterward the promoter of the disastrous Darien scheme. It was the first public bank in the United Kingdom, and was chartered in 1694. It was constituted as a joint-stock association, with a capital of £1,200,000, which was lent at interest to the government of William and Mary, then in a state of embarrassment. At its very outset, therefore, the Bank of England was a servant of government; and in a lesser or greater degree, it has had this character through all the stages of its subsequent history. At first the charter of the Bank was for eleven years only; but in consequence of the great services of the institution to government, its charter has been at various times renewed. The last renewal was in 1844, and the charter of that year still subsists, its terms being subject to modification or revocation by the legislature at pleasure. By the act or charter of 1844, the Bank was divided into two departments—the *issue* and the *banking*. In the *issue* department of the Bank of England, its sole business is to give out notes to the public. Before the separation of the departments, the government was owing the Bank £11,015,100. This sum was declared to be now a debt due to the issue department, and for the issues of notes to that amount no gold requires to be held by it. This was just the same thing as if the Bank had originally lent £11,015,100 of its notes to government, and these notes

had come into circulation. The Bank was also allowed to issue additional notes on securities—that is, to lend them to a certain limit without holding gold. The amount of notes which may thus be issued, without gold reserve is £15,750,000. All notes issued above that amount can be issued only in exchange for gold. These notes are of the value of £5 and upward and are legal tender throughout England. Viewed in its *banking* department, the Bank differs from other banks in having the management of the public debt, and paying the dividends on it; in holding the deposits belonging to government, and in making advances to it when necessary; in aiding in the collection of the public revenue, and in being the bank of other banks. The remaining profits of the Bank are derived from its use of its deposits, on which it allows no interest, and of its own capital. In compliance with the act of 1844 the bank is compelled to publish a weekly account of both departments.

The Bank of France is second in importance to the Bank of England. It was founded in 1800, but was not placed on a solid and well-defined basis till 1806, when its capital was raised to about $18,000,000 (90,000,000 francs). The capital now is about $36,500,000 (182,500,000 francs). Though the B. of France is a private company, it is in reality a semi-official institution, its operations being under state control, and its gov. and deputy-govs. being appointed by the state. The B. of France has had the monopoly of issuing bank-notes since 1848, when the shareholders of 9 banks of issue in the country acquired 23,351 new shares of the B. of France; the 9 banks then were constituted its branches. Like the Bank of England it is a bank of deposit, discount, and circulation, and is a large creditor of the state.

The power to print and circulate notes as money began, in the U. S., with the issue by the colony of Massachusetts, 1690, of bills of credit payable on demand. This was followed, during the next half century, by similar action on the part of the other colonies. In 1712, South Carolina had a bank, in 1723, Pennsylvania, and Massachusetts one in 1739. The issue of the 'Continental currency' during the Revolution resulted in such a depreciation of that money that by 1781 it was worthless, though it was redeemed later at an enormous discount. The beginning of 1782 found the Bank of North America in Philadelphia under a charter from Congress; and two years later it was in operation, with charters also from New York and Pennsylvania. Then the Bank of New York was chartered, and then the Bank of Massachusetts, 1784, and soon all the states had banks. The constitution, going into operation 1789, forbade the issue of money by the states. In 1791 the Bank of the U. S. was established with a 20-year charter. Its capital was fixed at $10,000,000, and it was further authorized to hold property of all kinds to an amount not exceeding $15,000,000, inclusive of its capital stock. It was made the depository of all

public moneys, was permitted to issue notes payable in specie, and could establish branches in various cities. At the time of the expiration of the bank's charter there were nearly 90 state banks in existence, opposed to its renewal, and, in 1814 there were 150 of these, with a combined circulation of $62,000,000. But the war of 1812 brought disaster to many of these institutions, and depreciated the paper of others, and in 1816 it was found necessary to charter a second United States Bank. This second charter was also for 20 years; it fixed the capital at $35,000,000, divided into 350,000 shares of $1,000 each. Of this amount $7,000,000 was held by the United States Government, while the remainder of the stock was easily disposed of. The bank issued its notes, in amount not less than $5, payable in specie on demand and transacted a general banking business so successfully that its stock was quoted at 50 per cent. above par; and it soon established branch banks in all the important cities throughout the country. In 1830 there were 27 of these branches all engaged in doing a thriving business. With such a reliable institution at their command it is not surprising that the people should have looked with no little mistrust upon the unsatisfactory methods pursued by the state banks. As the result many of them closed their doors, so many, in fact, that, of the 446 state banks then in operation, only 165 remained. At the same time the aggregate state banking capital of the whole country for the year 1814, $90,000,000, showed a withdrawal of only $30,000,000 by reason of these suspensions At the same time such institutions continued in existence and precautionary laws to govern their operation were enacted by the legislatures of many states. The first savings bank in America was opened in 1816 (See Savings Banks).

During the many years of its existence the Bank of the United States continued to increase in prosperity and influence; but its great power had made it enemies, and a demand arose, upon Gen. Jackson's election to the presidency, that it should not be rechartered. The President himself favored this demand, though many of the officers of the party opposed him, and consequently in 1832 he vetoed a bill renewing the charter of the United States Bank, and removed therefrom the government deposits, when the institution speedily collapsed, leaving the bank system to banks chartered by the several states. These at once made the most of their opportunities; and helped, as they were, by receiving on deposit large sums of the distributed public moneys they increased rapidly; in 1837 there were 634 of them in the country, having an aggregate capital of $291,000,000. The temporary prosperity which followed the new issues of state bank-notes assumed the form of the wildest kind of speculation. In 1837 the banks suspended specie payments, and again in 1839; but despite all the trouble in which they were involved the number of state banks increased rapidly.

In 1857 there was another period of financial stress.

during which many of the banks closed; but, though this period was short, and the return of prosperity rapid, there was a growing dissatisfaction with the system of state banks, and a constant doubt as to the security of these institutions. This had brought about the establishment by the state of New York of the 'safety-fund system,' by which a banking department of the state was formed, with which every bank kept on deposit federal or state stocks, or bonds and mortgages, for the purpose of liquidation in case of failure. One great difficulty involved in the state banking system was the prevalence of counterfeiting; another was the different estimation in which the issues of the banks of different states were held at the financial centres. These troubles culminated at the period of the Rebellion, so that the business community was ripe for the important experiment of the National Banking System. Thus the national banking law was passed 1864, June 3. According to the provisions of this law the establishment of a bank requires the association of not less than five persons, and a fully paid-up capital (not less than $50,000). To secure its notes of issue it is compelled to hold the government's pledge in the form of United States bonds, on which the comptroller of the currency authorizes it to circulate such notes to an amount equal to the par value of the securities not exceeding the authorized capital stock. Wise and secure as these conditions were, they would have been of little value in improving the currency situation if the state banks had been permitted to continue to issue their notes under the system that had existed since 1836. To meet this difficulty, therefore, Congress passed a law placing a prohibitive tax of 10 per cent. on the circulating notes of the state banks. Many of the old state banks changed their organization to meet the requirements of the new national bank law, and, at the close of the war, there were not more than 500 of these institutions that had neither complied with the provisions of the new statutes nor gone out of existence. Those that remained continued to do what they are still doing. They transacted a general banking business of loan, discount and deposit, and left the circulation of notes to the national banks. The national banks, however, have been the foundation of the American banking system since their establishment. As government depositories they perform without charge duties that annually save the government a great deal of money. As a governor of the national currency operating to keep it within controllable bounds, the national banks have also been of the greatest assistance through the facilities they afford for the issue of instruments of credit. As the national banks do not usually pay interest on current balances, the fact that they are utilized as banks of deposit to such a great extent shows the appreciation in which the facilities afforded by them for the transaction of business are held by the public at large. Until 1883, March 3, both capital and deposits of the national banks were taxed, and a further tax on their circulation has been

continued from the first. A new law passed 1900, March 4, made a number of important changes in the regulations governing national banks. This law permits national banks with $25,000 capital to be organized in places of 3,000 inhabitants or less, the former minimum being $50,000. It also permits banks to issue circulation on all classes of bonds deposited up to the par value of the bonds, instead of 90 per cent. as before; and it reduced the semi-annual duty on the circulation to one-fourth of 1 per cent. Up to the end of 1907, March, 2,179 national banks were incorporated under this new law with an average capital stock of about $26,000; in the same period 1,178 banks were organized under the original law. Of the total, however, 380 associations were conversions of state banks and 1,093 organizations of national banks to succeed state or private banks, which concerns were closed to sell their business to the national banks and for the conversion of shareholders or proprietors' interests into stock of national banks. The number of primary organizations, 1,884, is only a trifle more than 50 per cent. of the total number of national banks chartered since 1900, and this number represents practically the actual increase of banking institutions, exclusive of state and private banks incorporated in the same period.

The act of 1882, July 12, provides in part that not more than three millions of dollars of lawful money shall be deposited in any calendar month to provide for the reduction of national bank circulation. This act was amended by the 'Aldrich bill' approved 1907, March 4, to read as follows:

'That any national banking association now organized or hereafter organized, desiring to withdraw its circulating notes, upon a deposit of lawful money with the Treasurer of the United States * * *, is authorized to deposit lawful money and, with the consent of the Comptroller of the Currency and the approval of the Secretary of the Treasury, withdraw a proportionate amount of the bonds held as security for its circulating notes in the order of such deposit: *Provided*, That not more than nine millions of dollars in lawful money shall be deposited during any calendar month for this purpose.'

As a result of the amendment in question, the outstanding circulation of national banks secured by bonds was reduced during March of that year to the extent of $2,104,310, or from $549,737,373 to $547,633,063.

On 1906, Sept. 4, there were in operation 6,137 national banks with paid-in capital stock of $835,066,796, and surplus and other profits of $670,814,981. The surplus proper was $490,245,124, which is nearly three times the amount required to be accumulated and maintained under the law. The surplus and 'other undivided profits' amount to over 80 per cent. of the paid-in capital.

Of the total liabilities of the banks, namely, $8,016,021,066, over one-half, or $4,199,938,310, is represented by individual deposits. The deposits to the credit of banks

amounted to $1,589,001,462, and to the credit of the United States and disbursing officers of the Government $107,831,814.

The principal items of resources of the banks were as follows: Loans and discounts, $4,298,983,316; United States bonds $628,796,710; other bonds and securities, $701,240,755; specie, $464,437,291 (of which $363,840,256 represents gold and gold certificates), and legal tenders $161,575,120.

On the same date the number of banks other than national banks was reported to be 11,582, being 1,110 more than in 1905. The aggregate resources of these banks amount to $10,363,350,846, being an increase of approximately $773,000,000 over the previous year. The returns include 8,862 commercial banks, 742 loan and trust companies, and 1,319 savings banks (of which 678 were of the mutual class—(that is, without capital stock) and 929 private banks and bankers.

The capital stock of the State banks is $421,845,705; individual deposits, $2,741,464,129; surplus and undivided profits, $251,114,808. The loans aggregate $2,272,959,-644; investments in stocks, bonds and other securities, $412,966,794, and total resources, $3,677,050,317. The resources of state banks reporting in 1905 aggregate $3,190,911,378, thus showing a gain in 1906 of $486,138,-939.

BANK-NOTES, Manufacture of: the chief thing to attend to in the manufacture of bank-notes is the rendering of their forgery impossible, or at least easy of detection. This is sought to be effected by peculiarity of paper, design, and printing. Bank of England notes are printed in one of the blackest and most indelible of inks on paper expressly made for the purpose by one firm only. It is hand-made paper remarkable for its strength, lightness, and difficulty of imitation. Its peculiar water-mark constitutes one of the chief safe-guards of the notes against forgery. No Bank of England notes are issued twice, so that this mark is rarely indistinct, and the paper does not lose its peculiar crispness. Some years ago a self-registering machine was invented for impressing on each note a distinctive mark known only to the bank authorities. Owing to some of their notes printed simply in black ink having been successfully forged by photography, those issued by the Scotch banks have since 1858 been printed in colored inks, at least two colors being used for each note. In order still further to lessen the risk of forgery, a new kind of note was in 1885 issued by the Bank of Scotland, printed in brown, yellow, and blue. The paper is of a similar kind to that used for the Bank of England notes, with an elaborate and easily recognized watermark. Many bank-notes of other countries are printed in colored inks.

Between 1837 and 1855 the plan of Perkins and Heath for reproducing an engraved steel plate by the use of the mill and die continued in use in the Bank of England. The pattern is engraved on a soft steel plate, which is then

hardened, to transfer the pattern by pressure to a soft steel roller, on which, of course, the pattern is produced in relief; the roller or mill is then hardened, to reproduce the pattern in the plate from which the printing is to be done; and thus almost any number of plates for all common purposes can easily be produced.

In 1855 electrotype-printing was introduced by Mr. Smee, with the assistance of the mechanical officials (see ELECTRO-TYPING); and since that time, the notes of the Bank of England have all been produced by surface-printing by the electrotype.

The manufacture of bank-notes is now carried on by the U. S. government in the treasury department at Washington. The notes are printed on a distinctive silk-threaded fibre paper issued in sheets from the office of the sec. of the treasury, to the bureau of engraving and printing for each fiscal year. There were on hand in the bureau of engraving attached to the treasury dept. 1893, Feb. 1, 806,176 sheets, finished and unfinished, of national bank-notes, of denominations $1, $2, $5, $10, $20, $50, and $100; representing a total value of $36,339,480. During the fiscal year of the bureau ending 1892, Sep. 30, there were completed 13,728,494 sheets of U. S. notes, treasury notes, gold certificates, silver certificates, bonds, and national bank-notes; having the enormous face value of $709,760,800. The sheets on which the currency is to be printed are counted as soon as received, and the result reported for verification. The notes are printed from dies, a separate die being needed for every shade of color used. These dies are made of highly polished steel, upon which the designs are first sketched, and which are then carefully engraved, the lines which take the ink being cut into the plate instead of being raised above its surface as in wood engraving. Scroll-work and elaborate tracery are done by machinery. Such work is made by a machine which by changing the combination never reproduces the same design. The ink for printing is made on the spot, nothing but the finest colors and the best boiled linseed oil being used. The presses used are simple cylinders operated by long-handed levers, each of them being attended by three men and a girl. A workman with a plate-printer's roller rapidly covers the plate with ink, and passing it to another operator at his side it is wiped with soft cotton cloth, then polished with the palm of the hand covered with whiting, an operation which removes the ink from the surface of the plate but not from the engraving. This being done the plate is laid face upwards in the press. The girl carefully lays upon the plate a sheet of damp paper, the pressman turns the levers, and the note is printed.

BANKRUPT, n. *băngk'rŭpt* [F. *banqueroutte*, bankruptcy: Sp. *bancarotta:* It. *banco*, a merchant's place of business: Eng. *bank;* L. *ruptus*, and OF. *roupt*, broken]: a merchant or trader whose credit is broken with the bank; any one who becomes unable to pay his just debts; ADJ. declared to be in debt beyond the power of payment: V. to

disable one from paying the claims of his creditors. BANK'-RUPTING, imp. BANK'RUPTED, pp. BANKRUPTCY, n. *băngk'rŭpt-sĭ*, the state of being a bankrupt; the act of becoming a bankrupt; failure in trade; the insolvency of a merchant or trader: see INSOLVENCY. TO MAKE BANKRUPT, to make insolvent; to cause to be declared in indebtedness beyond the power of payment. See DYVOUR AND DYVOUR'S HABIT.

BANKRUPTCY, or INSOLVENCY: in law, the state of a person declared unable to pay his debts. The law formerly made a distinction, no longer observed, between B. and *insolvency*, B. being the term applied to the condition of a 'trader' who cannot pay his debts, and insolvency to that of a person not a trader. The distinction was abolished in England by the B. Act of 1869. In the United States the two terms are used indifferently, both by lawmakers and by jurists; though laws of congress have usually been called Bankrupt laws, and those of the states usually Insolvent laws. As long as the English distinction between the two classes of insolvent debtors was maintained, there were different courts, called bankrupt and insolvent courts, for traders and non-traders respectively. The non-traders comprised country gentlemen, professional men, 'gentlemen at large,' and nondescripts of every degree. Traders were brought into the court of B. on petition usually of their creditors; while non-traders petitioned the insolvency court voluntarily. The bankrupt was regarded and treated as a criminal; and formerly his neglect or refusal duly to surrender his property under a commission of B., when summoned, was a capital felony. In the B. court forcible possession was taken of the trader's property and assets of every kind, which were converted into money, and the proceeds distributed *pro rata* among the creditors; thus the debtor was stripped of everything salable that he had, with a few trifling exceptions; but on the other hand he received a certificate which entirely cleared him of the incumbrance of any past debts forever, freeing him from imprisonment and even from future liability On the other hand, the non-trader insolvent was required to give up all his property, and to state fully all the debts and liabilities that he had incurred; thereupon he was discharged: but liability for the debts still remained, a burden on his future. But the rigor of the law was modified by the practice of the courts, and considerable leniency was shown the insolvent debtor, so that practically both in B. and in insolvency the debtor was more or less whitewashed, and was at least exempted from imprisonment. The B. laws of England date from the reign of Henry VIII., and at first were directed mainly against the criminal frauds of traders; the insolvency laws date from the reign of Elizabeth, and the distinction noted above was always observed until the 'bankrupt act' of 1861 abolished the 'court for the relief of insolvent debtors,' and transferred its jurisdiction to the court of B., thus making non-traders also subject to the law of B. In 1868–9, further changes were made; and finally the 'bankruptcy act' of 1883 abolished the special 'court of B.,' and trans-

ferred its jurisdiction to the 'high court of justice,' in causes in the London district, and to the county court elsewhere. A large part of B. jurisdiction, however, is exercised by the registrars, and all the B. courts have very large discretionary powers in procedure.

By the constitution of the United States, art. 1, sec. 8, congress has 'power to establish a uniform rule on the subject of . . . bankruptcies throughout the United States,' and under that power B. laws were enacted 1800 (repealed 1803), 1841 (repealed 1843); and 1867 (repealed 1878). The act of 1878, June 7, annulled all then existing B. legislation, and no further laws on the subject were enacted till the act of 1898, July 1. This act provides a complete system throughout the United States, and for its administration by the United States courts in place of the different systems formerly in existence in the various states administered by state courts. In bankruptcy proceedings, a bankrupt debtor may turn over all his property to the court, to be administered for the benefit of his creditors, and then get a complete discharge from his debts. A bankrupt may of his own motion offer to surrender his property to the administration of the United States court and ask for his discharge in voluntary bankruptcy, or creditors may apply to the court to compel a bankrupt to turn over his property to be administered under the act for the benefit of the creditors in voluntary bankruptcy. The bankrupt who has turned over all his property and conformed to the provisions of the act, is entitled to a judgment of court discharging him from any future liability to his creditors. Sec. 4 of the act sets forth who may become bankrupts as follows: (*a*) Any person who owes debts, except a corporation, shall be entitled to the benefits of this act as a voluntary bankrupt. (*b*) Any natural person (except a wage-earner or a person engaged chiefly in farming or the tillage of the soil), any unincorporated company, and any corporation engaged principally in manufacturing, trading, printing, publishing, or mercantile pursuits, owing debts to the amount of one thousand dollars or over, may be adjudged an involuntary bankrupt upon default or an impartial trial, and shall be subject to the provisions and entitled to the benefits of this act Private bankers, but not national banks or banks incorporated under state or territorial laws, may be adjudged involuntary bankrupts.

The provisions under which a man can be thrown into bankruptcy against his will are as follows: (1) Where a man has disposed of his property with intent to defraud. (2) Where he has disposed of his property to one or more creditors to give a preference to them. (3) Where he has given a preference through legal proceedings. (4) Where a man has made a voluntary assignment for the benefit of his creditors generally. (5) Where a man admits in writing that he is bankrupt. The last two provisions are practically voluntary proceedings. Under the common law, a man is considered insolvent when he cannot pay his debts when they are due; under the new law, he is deemed insolvent only when his property, fairly valued, is insufficient to pay his debts. Only two offenses are cited

under the new law: one when property is hidden away after proceedings in bankruptcy have been begun, and the other when perjury is discovered. Discharges are to be denied in only two cases; one, in which either of the offenses detailed has been committed, and the other, when it is shown that fraudulent books have been kept. The term of imprisonment for either of these offenses is not to exceed two years.

Sec. 7 defines the duties of bankrupt's as follows: (*a*) The bankrupt shall (1) attend the first meeting of his creditors, if directed by the court or a judge thereof to do so, and the hearing upon his application for a discharge, is filed; (2) comply with all lawful orders of the court; (3) examine the correctness of all proofs of claims filed against his estate; (4) execute and deliver such papers as shall be ordered by the court; (5) execute to his trustee transfers of all his property in foreign countries; (6) immediately inform his trustee of any attempt, by his creditors or other persons, to evade the provisions of this act, coming to his knowledge; (7) in case of any person having to his knowledge proved a false claim against his estate, disclose that fact immediately to his trustee; (8) prepare, make oath to, and file in court within ten days, unless further time is granted, after the adjudication if an involuntary bankrupt, and with the petition if a voluntary bankrupt, a schedule of his property, showing the amount and kind of property, the location thereof, its money value in detail, and a list of his creditors, showing their residences, if known (if unknown that fact to be stated), the amount due each of them, the consideration thereof, the security held by them, if any, and a claim for such exemptions as he may be entitled to, all in triplicate, one copy of each for the clerk, one for the referee, and one for the trustee; and (9) when present at the first meeting of his creditors, and at such other times as the court shall order, submit to an examination concerning the conducting of his business, the cause of his bankruptcy, his dealings with his creditors and other persons, the amount, kind, and whereabouts of his property, and, in addition, all matters which may affect the administration and settlement of his estate; but no testimony given by him shall be offered in evidence against him in any criminal proceedings.

Provided, however, that he shall not be required to attend a meeting of his creditors, or at or for an examination at a place more than one hundred and fifty miles distant from his home or principal place of business, or to examine claims except when presented to him, unless ordered by the court, or a judge thereof, for cause shown, and the bankrupt shall be paid his actual expenses from the estate when examined or required to attend at any place other than the city, town, or village of his residence. Provision is made in the act for allowing bankrupts to compromise or settle with their creditors by a proceeding known as composition proceedings, and the aim of

the act is to make the expense of the proceedings depend largely upon the amount of property involved.—See DEBT, ACTION OF: DEBT, IMPRISONMENT FOR: DEBTOR AND CREDITOR, LAWS OF: DEBTS, RECOVERY OF: HOMESTEAD ENTRY: HOMESTEAD LAWS: IMPRISONMENT.

BANKS, in Navigation: elevations of the bottom of the sea; when moderately smooth at the top, they constitute *shallows, shoals,* and *flats;* but when rocky, they are *reefs, ridges, keys,* etc. A chart, properly prepared, always defines them by means of small dots, if sandy, and small crosses, if rocky. The Newfoundland B. and the Bahama B. are well-known examples.

BANKS, *băngks,* SIR JOSEPH: 1744, Feb. 13–1820, June 19; b. London; descended from a family of Swedish origin, which had been settled in England for about 200 years. Of this family was John, a writer of tragedies, in the latter half of the 17th c. Sir Joseph, the naturalist, was educated at Eton and Oxford. In 1763 he made a voyage to Newfoundland and Labrador, collecting plants; and, 1768–71, he sailed with Cook round the world in the capacity of naturalist, and wrote the botanical descriptions for the first voyages. In 1772, he visited the Hebrides and Iceland. In 1777 he was elected pres. of the Royal Society, an office which he held for 42 years; in 1871 he was created a baronet. He founded and managed the African Association; and the colony of Botany Bay owed its origin mainly to him. Through his efforts, the bread-fruit tree was transferred from Otaheite to the West Indies, and the mango from Bengal, as well as many of the fruits of Ceylon and Persia. Many naturalists and travellers—Blumenthal, Hornemann, Burckhardt, Mungo Park—and others were indebted to him for zealous and disinterested assistance in their labors. During the French war, B. did much to alleviate the sufferings of all captive men of science, and used his influence with government to procure the restoration of their papers. Cuvier, in his *éloge* on him before the French Acad. of Science, states that no less than ten times had collections, captured by the English, been restored to the Jardin du Roi at Paris through the instrumentality of B. No man of science appealed to him in vain for pecuniary assistance; and his splendid library of natural history was at the service of those who desired to consult it. With the exception of articles in magazines, and contributions to the publications of learned societies, especially to the *Philosophical Transactions,* B. has written nothing but two small works—*A Short Account of the Causes of the Diseases in Corn called Blight, Mildew, and Rust,* printed for his friends 1803, and for the public 1805; and *Circumstances Relative to Merino Sheep* (London, 1809). He left a valuable library, of which an excellent catalogue was made by his friend Dryander; and a rich collection of specimens in natural history, both of which he bequeathed to the British Museum.

BANKS, SAVINGS. See SAVINGS-BANKS.

BANKS, *băngks*, NATHANIEL PRENTISS, LL.D.: born Waltham, Mass., 1816, Jan. 30. He attended the common schools in his native place, and then learned the trade of machinist in a cotton factory. His evenings were given to study and to preparing for the lecture-field, which he entered while a mere youth. He was editor of a local paper, and after being admitted to the bar was elected to the state legislature 1849, was speaker of the house 1851, elected to congress 1852, and the following year was chairman of the Mass. constitutional convention. By voting against the Kansas-Nebraska Bill, he lost the support of his party, but was elected to congress 1854 by the republicans and know-nothings, and 1856 was chosen speaker of the house on the 133d ballot. He was returned to congress by the republicans, but resigned 1857, to become gov. of Mass. After serving three terms as gov., he became, 1860, pres. of the Illinois Central r.r., but resigned the office and was appointed maj.gen. vols. in the Union army 1861. He served in various campaigns till 1864, when, on account of the failure of an expedition against which he had strongly protested, he was relieved from command. He was returned to congress 1864, 66, 68, and 70, defeated 72, re-elected 74, and after serving as U. S. marshal for Mass. was again elected to congress 1888, and defeated 1890. D. 1894.

BANKS, THOMAS: eminent English sculptor: 1735, Dec. —1805, Feb. 2; b. Lambeth. B. was apprenticed to a landscape gardener and architect, but soon abandoned these practical arts for sculpture. In 1770, B. won the gold prize of the Royal Acad. In 1772, with an allowance of £50 a year from the Acad. for three years, he went to Rome to study its masterpieces. After several years in Rome, during which he exhibited two of his finest works, *Caractacus Pleading before Claudius*, and *Psyche and the Butterfly*, and having gained much fame but little money, he returned to England. Here his refined imaginative style was little appreciated in comparison with the inferior style then in vogue; and after two years, he went to Russia, where he was well received by the Empress Catharine, who purchased his Psyche, and gave him a commission for a group called *Armed Neutrality*. Having executed this, he returned to England, where he completed perhaps his finest work, *The Morning Achilles*, now in the British Institution; and was elected a member of the Royal Acad. The monument of Sir Eyre Coote in Westminster Abbey, and of Captains Burgess and Westcott in St. Paul's Cathedral, were among his last works. It was in purely imaginative works that B. most excelled; in practical subjects, his introduction of the ideal was incongruous and inartistic, rendering his work in that department less satisfactory than that of some of his rivals.

BANKSIA, *băngk'sĭ-a:* genus of Australian shrubs of the nat. ord. *Proteaceæ* (q. v.), named in honor of Sir Joseph Banks. A few of the species become small trees. They

have hard, dry leaves, generally white or very pale green beneath, and present a remarkable appearance from the umbellate arrangement of their branches, which bear towards their extremities oblong heads of very numerous flowers. The flowers secrete much honey. Some of the species are now frequent ornaments of green-houses. They abound in all parts of Australia, forming, indeed, a characteristic feature of its vegetation, and are called Honeysuckle trees. *B. Grandis*, found at Swan river, exceeds all the rest of the genus in size, attaining a height of 50 feet.

BANK SWALLOW: called also BANK-MARTIN, or SAND-SWALLOW, or SAND-MARTIN (*Clivicola riparia*); bird of the swallow family (*Hirundinidæ*), named from the banks of earth where it excavates its nesting retreats. These are holes, often countless and close together in the face of a sandy cliff, and extending horizontally to the depth of 1-3 ft. or more. The genus, otherwise named *Cotile*, is distinguished by a tuft of feathers on the lower part of the tarsus, and by lustreless plumage; and this species is mouse-gray above, pale below, with a dusky brownish shade across the upper part of the breast. It is common in Asia, Europe, and America.

BANN: name of two rivers in the n.e. of Ireland; the one the Upper B., flowing into, and the other, the Lower B., out of Loch Neagh. The Upper B. rises on the n. side of the Mourne Mountains, in the s. of Downshire, and runs 25 m. n.n.w. through the counties of Down and Armagh, successively in a granite, silurian, trap, and tertiary basin, into the s. side of Lough Neagh. It passes Banbridge, Gilford, and Portadown. At Portadown the Newry canal joins it. The Lower B., strictly the continuation of the Upper, issues from the n.w. corner of Lough Neagh, and flows 40 m. n.n.w. through Lough Beg, dividing the counties of Antrim and Londonderry. It runs past Portglenone and Coleraine, into the Atlantic Ocean 4 m. s.w. of Portrush. It has important salmon and eel fisheries. Vessels of 200 tons can reach Coleraine by the river, 4 m. from the ocean.

BANNATYNE CLUB, *băn'a-tīn:* a literary society, named from George Bannatyne, who collected and preserved much of the Scottish poetry of the 15th and 16th c.: instituted, Edinburgh, 1823, by Sir Walter Scott. Its object was to print rare works illustrative of Scottish history, topography, poetry, miscellaneous literature, etc., in a uniform and handsome manner—the number printed of each being limited. The membership, originally 31, was gradually extended to 100, many of its members being men of high distinction: its first president was Sir Walter Scott, and its only secretary was David Laing. Its annual meetings seem to have been highly convivial. The Bannatyne Club printed 116 works, many of them rare and valuable.

BANNER, n. *băn'nĕr* [F. *bannière:* It. *bandiera*—from *banda*, a strip of cloth: Goth. *bandva*, a sign]: a band or strip of cloth as a sign; a square flag; a flag or ensign. BANNERED, a. *băn'nĕrd*, bearing banners. BAN'NERLESS, a. without a banner. BANNERET, n. *băn'nĕr-ĕt* [F.]: a little banner. KNIGHT BANNERET, a knight dubbed for valor on the field of battle, and permitted to use his pennon as a banner. BAN'NEROL, n. [F. *banderole*]: a little flag; a streamer, See BANDEROLE.

BAN'NER: a piece of cloth attached to a pole, and usually bearing some warlike or heraldic device, or national emblem. In this sense B. is a generic term, including many species, such as standard, ensign, pennon, flag, etc. Banners have been used from the earliest times, and in all countries, for the purpose of directing the movements of troops. They are frequently mentioned in the Old Test., as in Num. ii. 2: 'Every man of the children of Israel shall camp by his standard, and under the ensign of his father's house.' The earliest Roman standard was a bundle of straw fixed to the top of a spear. This was succeeded by figures of animals—the horse, the boar, etc., all of which soon gave place to the eagle, which continued all along the chief Roman ensign, and was afterwards assumed by the German and later by the French emperors of the Napoleon dynasty. In addition to the eagle, each Roman cohort had a B., generally a serpent or dragon woven on a square cloth. The standard of the cavalry was a square cloth expanded on a cross, and it was to this that the term *vexillum* properly applied. Examples of these standards are sculptured on the Arch of Constantine at Rome. The top of the staff was also frequently adorned with a figure of Mars or of Victory, and in later times with the head of the reigning emperor. After Constantine embraced Christianity, the Cross was substituted for the head of the emperor on the purple B. of Byzantium. Standards were less in use among the Greeks than among other warlike nations; but a standard, and sometimes a scarlet flag, was employed as a signal for giving battle. On the rise of Chivalry, in the middle ages, the ordering of banners, like every other branch of military organization, attained an almost scientific exactitude. From the B.-royal, which bore the national emblems, to the small streamer attached to the lance, with its cross or stripes, there was a regular subordination, each emblem having its place and its meaning. The pennon of the simple knight differed from the square B. of the banneret (q v.), in being pointed at the ends. In addition to their varieties in size, shape, and color, these banners were distinguished by the emblems which they bore. One of the earliest is the Danish raven, depicted on the standard taken by Alfred, of which Asser mentions the tradition, that 'in every battle, wherever that flag went before them, if they [the Danes] were to gain the victory, a live crow would appear flying on the middle of the flag; but if they were doomed to be defeated, it would hang down motionless.' The privilege of carrying banners did not belong to princes

and knights alone; bishops and abbots displayed similar ensigns, which were carried before them in religious processions and under which their retainers fought in their defense. It was to these that the term 'Gonfalon,' a word as to whose origin much diversity of opinion exists, was more commonly applied. In place of the heraldic emblems of the knight, the B. of the church, and of towns and communes, usually bore the effigies of saints. Some banners, however, displayed no ensigns whatever, and were known simply by their color. Of this the *oriflamme*, or plain ruddy flag of St. Denis, was a famous example. The celebrated Bayeux Tapestry (q.v.) throws considerable light on banners, as well as on other matters connected

Roman Standards from the Arch of Constantine.

with the warlike arrangements of the middle ages. Much curious information on this and kindred subjects will be found in Hewitt's *Ancient Armour and Weapons in Europe*. By every warlike people the B. has been regarded as the emblem of national honor, as a palladium for whose defense the individual warrior was at all times ready to sacrifice his life. From the converse of this feeling, banners and flags taken from the enemy have always been regarded as special trophies of victory, and places of honor in churches and public buildings have consequently been assigned them. As to the flags borne by the ships of different nations, and the arrangements concerning them in peace and war, see FLAG: as to colors of regiments, see COLORS: as to the relation which banners bear to other kinds of flags, in their forms and uses, see COLORS. MILITARY: ENSIGN FLAG: PENDANT, etc.

Banner displayed, is the term used by heralds to describe a B. open and flying.

BAN'NERET: a higher grade of knighthood conferred by the sovereign for some heroic act performed in the field of war, and so called because the pennon of the knight was then exchanged for the banner—which was effected by the simple means of rending the points from the pennon. The first B. in England is said by Froissart to have been made by King Edward I., and the last time the honor was conferred was probably after the battle of Pinkie, 1547; or perhaps (though this is doubtful) by Charles I. after the battle of Edgehill. The ceremony of the creation of a Knight-B. must have been very impressive to persons filled with the sentiments prevalent in the ages of chivalry. The king, or his general, at the head of his army, drawn up in order of battle after a victory, under the royal standard displayed, attended by all the officers and nobility of the court, received the B. elect, who was not necessarily a knight previously, led between two knights of note, or other men famous in arms, carrying his pennon in his hand, the heralds walking before him and proclaiming his valiant achievements, for which he deserved to be made a Knight-B. and to display his banner in the field. The king, or general, then said to him: 'Advance, Banneret!' (*Advances toy Banneret*), and caused the point of his pennon to be torn off. The new knight, with the trumpeters sounding before him, and the nobility and officers bearing him company, was sent back to his tent, where a noble entertainment was provided by the king. Some attempts have been made to revive the title in recent times, as when George III., at a review of the navy at Portsmouth, 1773, conferred it on Admiral Pye and several other officers.

BANNIANS: see BANIAN.

BANNOCK, n. *băn'nŏk:* [Scot.—from Gael. *bonnach*, a cake]: a cake of home-made bread, common in the country parts of Scotland, but now less so than formerly. It is usually of pease meal or of pease and barley meal mixed, prepared without any leaven; it is baked on a circular plate or iron, called a girdle. When made of mixed meal, it is called a mashlum bannock. A superior kind of B., called a Selkirk B., from the place where it is made, resembles the finer and lighter species of tea-cakes prepared by bakers. In the w. of Scotland, the word B. is pronounced *bunnock*. The B. is in fact the primitive cake, only varied in material, of every country.

BANNOCKBURN, *băn'nok-bĕrn:* a village in the e. of Stirlingshire, 3 m. s.s.e. of stirling; on the Bannock rivulet, which falls, a few miles below this, into the Forth. Near B. was fought the great battle of B., 1314, June 24, Monday. Robert Bruce, with 30,000 Scotch, gained a signal victory over Edward II., with 100,000 English, and secured his throne and the independence of Scotland. The English are said to have lost 30,000 and the Scotch 8,000 men. The 'Bore Stone,' on which Bruce is said to have fixed his standard on that eventful day, is still to be seen

on an eminence near the scene of the fight. On the s.e. of the field of B., at Sauchie Burn, James III. was defeated, 1488 by his rebellious subjects, and assassinated after the battle in a mill where he had taken refuge. B. is now an important seat of the woolen manufactures, especially those of tartan and carpets. It has long supplied the tartan worn by the Highland regiments. Tanning is carried on to some extent. Coal abounds in the vicinity. Pop. 2,600.

BANNS, *bănz* [see BAN]: proclamation or public notice, especially of an intended marriage, given in a church: one of three alternative preliminary forms essential to the legal celebration of marriage in England. The other two are marriage by license (see SPECIAL LICENSE) and marriage by a registrar's certificate. The usage of B. has its origin in the ancient practice of the Rom. Cath. Church.—In the several states of the Union the laws do not require proclamation of intended marriage, the marriage license generally having superseded the banns: in some of the states, e.g. New York, not even marriage license is required. Each state exercises supreme jurisdiction over the marriage contracts and marriage relations and divorces of its citizens.—See MARRIAGE: REGISTRATION OF BIRTHS, DEATHS, AND MARRIAGES.

BANQUET, n. *băng'kwĕt* [F.—from *banque*, a bench or table: It. *banchetto*, diminutive of *banco*, a bench or table]: a feast; a rich entertainment; anything delightful: V. to feast; to treat with a feast. BAN'QUETER, n. one who. BAN'QUETING, imp.: N. the act of feasting. BAN'QUETED, pp.—SYN. of 'banquet,' n.: feast; carousal; entertainment; treat.

BANQUETTE, n. *băng-kĕt'* [F.—from *banc*, a bank]: in *fort.*, a raised ledge or way inside the parapet of a rampart, of such a height that musketeers, when standing on it, may be able to fire over the crest of the parapet without too much exposure to the enemy. It is about 4 ft. wide, and 4 or 4½ ft. below the crest. The musketeers ascend to it from the rampart either by a few steps or by a sloping path.

BAN, RABBINICAL: A decree of condemnation. In Biblical times the word 'ban' or 'herem' signified extermination and denoted destruction of spoils of war, persons or objects, as an honor to the Deity, to whom they are to be devoted or dedicated. Thus in the inscription of King Mesha of Moab, it is told how he devoted seven thousand prisoners to his god. So in the early story of Israel, it is similarly related of Joshua against Jericho, of Samuel against the Amalekites. The ban was thus a primitive war measure against idolatrous nations, whose contact with Israel would mean defilement, and whose destruction, when moral improvement was impossible, was inevitable. In the post-biblical era, when wars were no longer possible, the word assumed a different significance, being employed as a means of synagogue or communal discipline, so as to

preserve religious purity. Thus under Ezra the ban proclaimed against those who would not participate in the revived commonwealth meant their separation, with the loss of their property, but not their death; for Ezra knew that in no other way could the spirituality of the new community be maintained.

In later times, the ban became a well defined instrument of ecclesiastical discipline, particularly as parties sprang up in Judea with the opposing claims of Pharisees, Sadducees and Essenees, royalist and republican, to use convenient terms, and heresy was not to be allowed. The ban was of varying degrees, and offenses for which they were applied were duly catalogued. It was either mildly corrective, with temporary expulsion or indefinite expulsion as the final punishment, or anathema proper. Undoubtedly, the ban was designed not only to preserve the morals of the community, but in the early centuries of dispersion, with Temple destroyed and all national unity disrupted, it became a powerful force in the maintenance of Judaism. It must be added that the ban was never hastily pronounced,—repeated warnings were given, and only as every alternative failed was the ban pronounced, which could be removed by a rabbi or tribunal of three laymen.

The rabbinical ban, or excommunication in vogue during the Middle Ages, was not an arbitrary mode of punishment, but employed to preserve Judaism and maintain the Jews' solidarity. There was an imposing number of offenses punishable by excommunication in varying forms, but these were never pronounced heedlessly. There is little doubt that the ecclesiastical environment of the Middle Ages when trials for heresy were so frequent, had its effect on the rabbis and their special tribunals. Two modern examples of rabbinical ban have become historic. One was that declared against Uriel Acosti (1590–1647), which Gutzkow has made the subject of a drama, by the Amsterdam Jewish community, which declared his views subversive of both Judaism and Christianity. He abjured his errors, but was again excommunicated for having dissuaded two Christians from becoming Israelites. For seven years he endured the disgrace and then recanted, submitting to public scourging in the synagogue, committing suicide shortly afterwards. The second historic instance is that of Baruch Spinoza (1632–1677), who was put under the ban by the Amsterdam Jewish community in 1656, by reason of his views, he having stated that angels were merely phantoms, that the soul is identified in the Bible with life and is mortal, and that in calling God 'great' the Bible attributes to God extension or body. The ban ended Spinoza's relations with the Jewish community.

In more recent decades, the ban has been employed by rabbinical authorities at periods of stress—notably by the Chief Rabbi of England against the Jewish reform move-

ment in London in 1840, and against sundry progressive rabbi scholars in Germany from time to time. But, as is true in other cases, it is thunder without lightning, rattle without fang. See WIESNER, *Der Bann in Seiner Gesch. Entwick auf dem Boden des Jud.*

BANSHEE, n. *băn'shē* or BEN'SHIE [Gael. *ban-shith*—from *bean*, a woman; *sith*, a fairy]: in popular *myth.*, a kind of goblin, in parts of Scot. and Ireland, supposed to give notice of death in a family. See BENSHIE.

BANSWARRA, *bân-swâ'râ:* Rajpoot state in the w. of Malwa, bordering on Guzerat; from n. lat. 23° 10′ to 23° 48′, and from e. long. 74° 2′ to 74° 41′; 1,500 sq. m. This state was dependent on the empire of Delhi until the ascendency of the Mahrattas, by whom it was fearfully oppressed. In 1812, the ruler made overtures to the British government, offering to become tributary on condition of protection; and an arrangement to this effect was concluded, 1818. Pop. abt. 150,000.

BANSWARRA: cap. of the state, is on the route from Mhow to Deesa; 123 m. n.w. from Mhow. The majority of the inhabitants are Hindus, but the Mussulmans also are numerous. The palace of the Rawul, or chief, is a large, turreted, battlemented building, on a rising ground overlooking the town, near a beautiful tank, overhung with trees.

BANTAM, *bân-tâm':* seaport, now decayed, in the residency of Bantam, which forms the w. end of Java. It was the first Dutch establishment in Java (1602). The residency suffered greatly from the destructive sea-wave following the eruption of Krakatau, 1883. Pop. of residency 520,000.

BANTAM, n. *băn'tăm:* a breed of small domestic fowls with feathered legs—probably from *Bantam* in Java, whence these fowls were first brought: ADJ., applied to the breed. The B. is remarkable for small size, being only about a pound in weight, and for a disposition more courageous and pugnacious than even that of a game-cock. A bantam-cock will drive to a respectful distance great dunghill-cocks five times its weight, and has been described as 'a beautiful example of a great soul in a little body.' There are several sub-varieties of the bantam. Most of them have the legs much feathered. The flesh and eggs are good, although the eggs are of course small; and the bantam lays well in winter. See FOWL.

BANTENG, *băn'tĕng* (*Bos Banteng* or *B. Sondaicus*) species of ox (q. v.), native of Java and Borneo; which in color, shape, horns, and want of dewlap bears some resemblance to the gaur (q. v.) of India, 'but in the skeleton of the gaur, the sacrum consists of 5 vertebræ, and the tail of 19, while in the skeleton of the B. the sacrum consists of but 4 vertebræ, and the tail of 18.' The B. is black, with white legs. The hair is short and sleek, the limbs slender. The muzzle is sharp. The back rises into a high

arch immediately behind the neck. The B. inhabits forests and has been generally described as untamable.

BANTER, v. *băn'tėr* [unknown, but probably originated as a slang word: F. *bander*, to bandy at tennis]: to joke with in words and in good-humor; to rally: N. wit at the expense of another. BAN'TERING, imp. BAN'TERED, pp. *-tėrd.*

BANTING, n. *băn't'ĭng:* after *Banting*, the promoter of a system of diet by which fat people try to get thin.

BANTING: a method at one time in favor for the reduction of obesity. It consisted in a restricted diet, all sweets and starchy foods being eschewed, the nitrogenous substances, meats, and certain of the pulses, constituting the chief elements of the diet. The method is usually more or less effective, but it has sometimes had very serious consequences as regards the general health, and should be undertaken only under medical advice and supervision.

BANT'ING, WILLIAM: an Englishman of notable corpulence: b. 1797; d. 1878. By adopting a diet he was able to relieve himself of his superfluous flesh, and accordingly he wrote a pamphlet called *A Letter on Corpulence* (1863), describing his system, which attracted so much attention that the word 'to bant' has been incorporated in the English language to express the reduction of obesity by diet. See also OBESITY.

BANTLING, n. *băn't'lĭng* [corruption of Eng. *bandling* —from the *bands* in which the child was wrapped]: a young child; an infant.

BANTRY, *băn'trĭ:* seaport town in the s.w. of Cork co., Ireland, in a cove at the head of B. Bay, 44 m. w.s.w. of Cork. Mountains 933 ft. high rise behind the town. B. is a summer resort for tourists. Pop. 3,000.—BANTRY BAY, deep inlet, 25 m. long, 3 to 5 m. wide, is one of the finest harbors in Europe; it has also three minor harbors perfectly sheltered.

BANTU, *băn'tô:* name given by ethnologists to a large group of languages, and to the peoples speaking them, in Africa. The B. races occupy most of Africa from about 6° n. lat. southward, except the country occupied by the Hottentots. They are broadly distinguished from the Negroes (q.v.), and are in three divisions. The eastern includes Kaffirs (q.v.) and Zulus (q.v.); and extends to the Galla and Somali country, the Swahili being the most northerly section. The central division comprises Betjuans (q.v.) or Bechuanas (Basutos, Barolong, etc.). To the western division belong the inhabitants of the w. coast from the Hottentot country to the Gulf of Guinea, the peoples of Benguela, Angola, Congo, Loango.

BANVARD, *băn'vârd,* JOHN: artist: 1820–91, May 16; b. New York. In early life he was a painter in Louisville, Ky., exhibiting his pictures on boats at the principal towns along the river. He began, 1840, a panorama of the entire Mississippi. In this arduous work he travelled in small open boats many thousand miles, making his preliminary sketches, and supporting himself by shooting game and exhibiting his pictures. The panorama, covering half a mile of canvas, was exhibited all over the United States. The art was not of high order, but his work was faithful and interesting. He afterward passed long periods in Europe, Asia, and Africa, painting many pictures which were exhibited. He published in magazines extensively, both prose and poetry, besides several vols. of fiction. B. painted *The Orison,* the picture from which the first American chromo was made.

BANXRING, *băngks'rĭng* (*Tupaia*): genus of insectivorous quadrupeds, remarkably differing from the other *insectivora* (q.v.) in their habits, as they climb trees with the agility of lemurs or squirrels; remarkable also for their very elongated muzzle. They have soft glistening fur, and a long bushy tail. The few species known are all natives of the Indian archipelago.

BANYAN, or BANIAN, n. *băn'yăn* or *băn-yăn'* [so named from the *Banians* (q.v.), who used their shaded area as a market-place: Skr. *banij,* a merchant], (*Ficus Indica*): English (not a native) name for a tree of India, remarkable for its vast rooting branches; nat. ord. *Morācĕæ.* It is a species of FIG (q.v.); has ovate, heart-shaped, entire leaves, about five or six inches long; and produces a fruit of a rich scarlet color, not larger than a cherry, growing in pairs from the axils of the leaves. The branches send shoots downwards, which, when they have rooted, become stems, the tree in this manner spreading over a great surface, and enduring for many ages. One has been described as having no fewer than 350 stems, equal to large oaks, and more than 3,000 smaller ones, covering a space sufficient for 7,000 persons. The branches are often thronged with monkeys, birds, and enormous bats. The monkeys eat both the fruit and leaves. The vegetation of the B. seldom begins on the ground. The seeds are deposited by birds in the crowns of palms, and send down roots which embrace and eventually kill the palm. As the B. grows old, it breaks

up into separate masses, the original trunk-decaying, and the props becoming separate trunks of the different portions. The wood of the B. is light, porous, and of no value. The bark is regarded by the Hindoo physicians as a powerful tonic, and is administered in diabetes. The white, glutinous juice is used to relieve toothache, and also as an application to the soles of the feet when inflamed. Bird-lime is also made from it. Gum-lac is obtained in abundance from the B. tree. See Bo-tree: Peepul.

BANYULS-SUR-MER, *bân-yél'-sür-mair:* town of France, in the Pyrénées Orientales, with a fishing-port on the Mediterranean. The celebrated wines of Grenache and Rancio are produced in this district. Near the town are four old towers, one of which marks the division between France and Spain. B. was the immediate scene of many encounters between the French republicans and the Spaniards during the first French Revloution. Pop. 2,796.

BANYUWANGY, or Banjouvangy, *bân-yô-wân'gē:* important seaport town and military post belonging to the Dutch, on the e. coast of Java. It is a telegraph station on the Port Darwin line.

BAOBAB, n. *bā'ō-băb'* [native name]: a tree of Senegal, also called monkey-bread, one of the largest known trees—its products are useful and medicinal; the *Adansōnĭă dĭgĭtātă*, ord. *Ster'culĭācĕæ*. See Adansonia.

BAP, n. *băp* [Scot.]: a small loaf of wheaten bread; a roll of bread.

BAPHOMET, *băf'o-mĕt:* a mysterious symbol, which was in use among the Templars. According to the oldest and most probable interpretation, the word is a corruption of Mahomet, to whose faith the members of the order were accused of having a leaning. The symbol consisted of a small human figure cut out of stone, having two heads, male and female, with the rest of the body purely feminine. It was environed with serpents, and astronomical attributes, and furnished with inscriptions mostly in Arabic. Specimens are in the archæological collections of Vienna and Weimar. Hammer, however, in his *Fundgruben des Orients*, derives B. from Gr. *baphè*, baptism; and *metis*, council or wisdom. He charges the knights with a depraved Gnosticism, and makes the word signify the baptism of wisdom—the baptism of fire; in short, the Gnostic baptism—a species of spiritual illumination, which, however, was interpreted sensually by later Gnostics, such as the Ophites (an Egyptian sect of the 11th c.), to whose licentious practices he declares them to have been addicted. This explanation is generally discredited.

BAPTA, n. *băp'ta* [Gr. *bapto*, to dip, to dye]: genus of moths of family *Geometridæ*. They are thin-bodied, and fly during the day. *B. bimaculata* is the White Pinion-Spotted, and *B. punctata* the Clouded silver Moth.

BAPTISM, n. *băp'tĭzm* [L. and Gr. *baptis'ma*—from Gr. *baptīzō*, I dip, I submerge, I cleanse with dipping. I make

clean with water—from *baptō*, I dip, I immerse]: the dipping in water, or sprinkling with water; a rite of sacred immersion, or ablution, commanded by Christ for those who, confessing him, enter on discipleship in his church. BAPTISMAL, a. *băp-tĭz'măl*, pertaining to baptism. BAPTIS'-MALLY, ad. *-lĭ*. BAP'TIST, n. one of a religious sect that disapproves of infant baptism. THE BAPTIST, John the Baptist of Scripture. BAPTIZE, v. *băp-tīz* [OF. *baptiser*—from mid. L. *baptīzārĕ*, to baptize]: to administer the rite of baptism; to christen. BAPTI'ZER, n. one who baptizes. BAPTI'ZING, imp. BAPTIZED, pp. *băp-tīzd'*. BAPTIZABLE, a. *băp-tī'ză-bl*, that may be baptized. BAPTISTERY, n. *băp'tĭs-tėr'ĭ*, a place for baptizing. BAPTISTIC, *băp-tĭs'tĭk*, or BAPTIS'TICAL, a. *-tĭ-kăl*, pertaining to baptism. BAP-TIS'TICALLY, ad. *-lĭ*.

BAPTISM (from the Greek *baptizō*, from *baptizein*, to immerse or dip), the application of water to a person as a sacrament or religious rite. It is generally thought to have been usual with the Jews even before Christ, being administered to proselytes, but was probably nothing more than a ceremony of purification. From this baptism, however, that of John the Baptist differed, because he baptized Jews also as a symbol of the necessity of perfect purification from sin. Christ himself never baptized, but directed his disciples to administer this rite to converts (Matt. xxviii. 19); and baptism, therefore, became a religious ceremony among Christians, taking rank as a sacrament with all sects which acknowledge sacraments.

In the primitive Church the person to be baptized was immersed in a river or in a vessel, with the words which Christ had ordered, and a new name was generally bestowed at this time further to express the change. Sprinkling, or, as it was termed, clinic baptism, was used only in the case of the sick who could not leave their beds. The Greek Church and various Eastern sects retained the custom of immersion; but the Western Church adopted or allowed the mode of baptism by pouring or sprinkling, since continued by most Protestants. This practice can be traced back certainly to the 3rd century, before which its existence is disputed. Since the Reformation there have been various Protestant sects called Baptists, holding that baptism should be administered only by immersion and to those who can make a personal profession of faith.

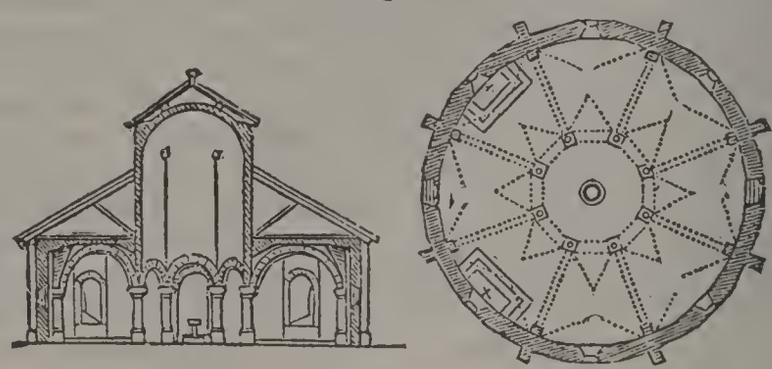
The Montanists in Africa baptized even the dead, and in Roman Catholic countries the practice of baptizing church bells,—a custom of 10th century origin,—continues to this day. Being an initiatory rite, baptism is, therefore, administered only once to the same person. The Roman and Greek Catholics consecrate the water of baptism, but Protestants do not. The act of baptism is accompanied only with the formula that the person is baptized in the name of the Father, Son, and Holy Ghost; but among most Christians it is preceded by a confession of faith made by the person to be baptized, if an adult, and by his parents or sponsors if he be a child.

The Roman Catholic form of baptism is far more elaborate than the Protestant. This Church holds that baptism is a sacrament which has the effect to remove in the individual the penal consequences of the sin of Adam, to restore him to a state of supernatural grace, and to give him a right to the beatific vision of God, remitting all actual sins committed by the individual. It also imprints an indelible character, which is both an ornament to the soul and a capacity for receiving the other sacraments. The effect of the sacrament is produced *ex opere operato*; that is, by an act of the Holy Ghost infallibly accompanying the performance of the external rite. Bishops, priests, and deacons are the ordinary ministers of baptism, and all others are forbidden to baptize except in case of necessity. Baptism is, however, valid when duly administered by any person, and any one may lawfully baptize in case of necessity. On the part of children and others who have never attained the use of reason no dispositions are required. In order to receive the sacrament validly a person who has the use of reason must know what he is doing and intend to receive baptism. In order to receive the grace of the sacrament he must have faith, and, if he has committed mortal sins, repentance; otherwise the grace of the sacrament remains suspended until he acquires the proper dispositions. Besides sacramental baptism, called *baptismum fluminis*, there are two substitutes which can supply its place, called, in a wide and improper sense, *baptismum sanguinis* and *baptismum flaminis*. The former of these is martyrdom, the second is the desire of baptism, accompanied by faith and perfect contrition or the love of God. These only supply the place of baptism when it cannot be had, and confer sanctifying grace, but not an indelible character. Solemn baptism is accompanied with the application of chrism and holy oil, and several other ceremonies of great antiquity, which are intended to symbolize the graces of baptism. By every mortal sin the sanctifying grace of baptism and the title to eternal beatitude are lost, but not the indelible character or the capacity and right to receive the graces belonging to the state of a member of the Church and a child of God, on condition of removing the obstacle of sin by penance.

Protestants hold that although the neglect of the sacrament is a sin, yet the saving new birth may be found without the performance of the rite which symbolizes it. Naming the person baptized forms no essential part of the ceremony, but has become almost universal, probably from the ancient custom of renaming the catechumen.

BAPTIST, John Gaspar: Anglo-Flemish painter: b. Antwerp; d. 1691. He came to England during the civil war and served under Lambert. He had in early life studied painting under Boschaert, and after the Restoration returned to his profession, and was often employed by Sir Peter Lely in painting draperies and backgrounds, and occasionally for similar purposes by Kneller. His skill was chiefly displayed in designs for tapestries.

BAPTISTERY [Gr. *baptisterion*, a large vase or basin]: name given sometimes to a separate building, sometimes to the portion of the church itself in which the ceremony of baptism was performed. In the latter case, the B. was merely the enclosure containing the font, to be seen in most English churches. According to the earlier arrangements



Section and Plan of Baptistery at Asti.

of the Christian Church, however, the B. seems usually to have been a building standing detached from, though in the immediate vicinity of the church to which it appertained. Baptisteries, at first, were either hexagonal or octagonal, but afterwards became polygonal, and even circular. The B. of St. Giovanni in Fonte, at Rome, commonly known as the B. of Constantine, is octagonal, while the church of St. Constantia, which was originally a B., is circular.

The celebrated B. of Florence is an octagonal structure, about 100 ft. in diameter. It stands detached from, but near, the cathedral. It is of black and white marble, in the style which Giotto is said to have introduced, and which is still peculiar to Florence. Internally, a gallery, which runs nearly round the whole building, is supported by 16 large granite columns, and the vaulted roof is decorated with mosaics by Andrea Tafi, the pupil of Cimabue. But the magnificent bronze doors, with their beautiful bas-reliefs, are the most remarkable feature of this famous baptistery. The most celebrated of the three doors was executed by Lorenzo Ghiberti, the earliest being the work of Andrea of Pisa. Fifty years were required for their completion; and it is remarkable that the contracts for their execution are still preserved. Next in importance, and of even greater size, is the B. of Pisa. It is circular in form, with a diameter of 116 ft. Externally, it is divided into three stories, the two lower surrounded by columns, of which the upper are smaller and more numerous than the under. The building is raised from the ground on three steps, and terminates in a pear-shaped dome, famous for its echo, the sides acting as whispering-galleries. The largest B. ever erected is supposed to have been that of St. Sophia, at Constantinople, which was so spacious as to have served on one occasion for the residence of the emperor Basilicus.

BAPTISTS (sometimes called *Antipædobaptists, as* opposed to *Pædobaptists*, or those who practice Infant Baptism): a denomination of Christians holding that baptism is immersion, and that it can rightly be administered only to those who profess personal faith in Christ. They trace their origin to the principles and practices of the primitive church and refer to the Scriptures, especially the Acts of the Apostles and their Epistles as affording, in their opinion, incontestable evidence that their leading tenets have the sanction of inspiration.

The particular tenet which characterizes B. among their fellow-Christians is, that baptism is an ordinance the validity of which depends on an intelligent faith on the part of the recipient. Their views on this question may be reduced to two heads — the *subjects* and *mode* of baptism. The subjects of the baptismal rite they hold to be believers in the Lord Jesus Christ. They ground their faith in this matter on the following positions — namely: 1st, The Lord in his commission to his apostles associates teaching with baptism, and *limits* the administration of the rite to *the taught*. 2d, The Acts of the Apostles shows how they understood their Master, for they baptized none but believers, or such as appeared to be so. 3d, That the kingdom of Christ as it appears in this world is restricted to credibly converted persons, as is shown in his discourse with Nicodemus: 'Except a man be born again, he cannot see the kingdom of God;' and his subsequent statements on to the hour when he uttered his memorable confession before Pilate, 'My kingdom is not of this world,' uniformly proves that its subjects and institutes form a distinct and separate community from the Jewish theocracy, which embraced in one commonwealth parents and children in nonage. 4th, They maintain that the ordinance, as explained in the New Testament, always points to a moral and spiritual change, apart from which it were indeed a meaningless ceremony.

As respects the *mode*, the B. hold that only immersion in water *is* baptism. They argue, that the original term *baptizo* conveys this meaning, and no other; that nothing less can possibly answer to the apostle's explanation in Rom. vi. 4, 5, and Col. ii. 12, 'buried with him in baptism, wherein also ye are risen with him;' that the many allusions in the epistles to the churches manifestly bear out this interpretation; and that the fact of John baptizing at a spot selected for the purpose '*because* there was *much water* there,' is conclusive for this interpretation.— For fuller statement of the Baptist position, see the last part of this article.

Their form of church government is purely congregational, and has developed great simplicity and strength. They maintain that the only officers are pastors (otherwise called elders and bishops), and deacons; that the number of official persons in each of the apostolic churches cannot be ascertained from the record, but

must of necessity have depended — and always must depend — on circumstances; that each local church is possessed of the power of self-government, under its exalted head, Jesus Christ, subject to no outside tribunal or court of review; that discipline is to be exercised in the presence, and with the consent, of all the members; and that persons are to be received or excluded at the voice of the whole membership.

The B. are divided among themselves regarding communion — one portion receiving conscientious Pedobaptists to the Lord's table and membership; the other refusing this privilege to any but Baptists. The churches of the former are called open communionists; the latter, strict or close communionists. B. in England, Scotland, and Wales are about equally divided; in the United States, almost all (in the regular connection) are 'close communionists.'

Next to the Lutherans and Moravians, the B. were earliest in the field of missions. They have been honored in planting Christian churches in many parts of continental India, in Ceylon, in the Bahamas, the West Indies, Africa, and China. No mission band has arisen in any denomination, within this century, who have surpassed those sent out by the B. of Britain and America in ardent zeal, patient perseverance, and invincible fortitude. The work among the Telugus in India has had results probably unequalled in modern times. The names of Carey, Marshman, and Ward, of Judson, Boardman, and Jewett, will be held in grateful remembrance by all generations; and their footsteps are now being trod by a long list of Christian missionaries of all evangelical persuasions, who are 'the messengers of the churches and the glory of Christ.'

In the United States, the B. (Associated) are one of the most powerful and active denominations.

The official report (1906) shows:

Ordained ministers	32,849
Churches	46,583
Members	4,709,311
Baptisms	255,570
Associations	1,793
Sunday-school scholars	2,086,722

CONTRIBUTIONS.

Church expenses	$14,061,541
State missions	582,649
Home missions	510,945
Foreign missions	527,310
Education	267,687
Miscellaneous	1,121,037
Total	$17,932,972

There were 656 new churches organized during the year 1905. A net increase in total membership of 98,612 is shown over the year preceding; but there has been a decreasing percentage of increase during the past five years. The B. are distributed evenly among the different states, as no state has more than 10 per cent. of the

total membership. It requires 17 states to cover 86 per cent. of the total membership.— The density of white membership runs from 1 Baptist to every 5½ of the white population in S. C., to 1 in 120 in Wis.; Colo., has 1 in 18; N. J., 1 in 36; N. Eng., 1 in 36; Ind., 1 in 40; Ill., 1 in 40; Kan., 1 in 41; N. Y., 1 in 46; Mich., 1 in 60; Io., 1 in 60; O., 1 in 62; Penn., 1 in 63; Minn., 1 in 93.— The density of colored membership runs from 1 in 3 in Va., to 1 in 13 in Tenn.; Ky. has 1 in 4; Ga., 1 in 5; N. C., 1 in 5; S. C., 1 in 5; Texas 1 in 6.— B. in their various denominations in the United States, amounting to about 3,500,000, comprise one-twentieth of the total population.

The Baptists of the United States employ (1906), under their different missionary societies, 769 missionaries in heathen lands, and 1,675 in home work, not including State missions.

The Baptist educational institutions comprise 8 theological seminaries, with a total of 92 instructors and 1,093 students; 94 universities and colleges with 1,860 instructors and 28,914 students; 100 male and female seminaries and academies with 858 instructors and 16,-225 students, making a grand total of 202 institutions with 2,800 instructors, 46,232 students, endowments of $26,128,762; and a valuation of $28,801,649 for grounds and buildings.

There are 44 charitable institutions with property worth in the aggregate more than $1,692,000.

The periodical literature consists of 71 weekly and 58 semi-monthly, monthly, and quarterly publications. The total number of publications of every kind issued by the Baptist Publication Soc., Philadelphia, during the year 1905 was 47,132,575 copies.

In Great Britain and Ireland, the returns for 1905 gave 2,934 churches, 2,109 ordained ministers, and 427,-563 members.

BAPTIST STATISTICS FOR THE WORLD, FOR 1906.

	Churches.	Ministers.	Members.
North America	47,862	33,621	4,856,862
South America	72	18	4,142
Europe	4,104	2,803	555,119
Asia	1,426	894	143,197
Africa	88	120	11,383
Australasia	270	201	22,862
Total	53,822	37,657	4,593,570

The following — prepared by an eminent Baptist preacher and writer — presents the position of the (regular) Baptist churches.

BAPTISTS, in their general faith, hold the principles commonly known as Calvinistic; though usually in a somewhat modified form; but in addition to this they declare that the Bible contains Christ's will in all that relates to Christian faith and practice, whether in doctrine, ordinance, the leading of a holy life, or in administering church government. This they have never sup-

plemented with any decree, standard of faith, or authoritative creed for subscription. They believe that a Christian church must be composed only of persons spiritually regenerated. With them, the church is not a mere voluntary association, but it is a body called out of the world around, by the Holy Spirit, to be a people peculiar to Christ. They maintain baptism and the Lord's Supper after the apostolic appointment; that baptism is the privilege only of believers in Christ Jesus; that it consists in a burial of the entire body in water, into the name of the Father and the Son and the Spirit; and that it is of no efficacy in regeneration of the soul, because each person must give reasonable evidence of his conversion to Christ in order to claim baptism at all. And, further, they earnestly oppose any connection of the church with the state, and all distinctions made by the state among its citizens on the ground of religion.

The great body of B. reject the doctrine of a visible succession of ministers or churches down from the apostles, as a merely human figment, clinging to the belief that the true succession from Christ and his apostles consists of a healthful descent of doctrine and practice, as vital to a true church. They say, with Zanchius, Bradford, Stillingfleet, Ridley, and Cranmer: 'Let succession know its place, and learn to vaile bonnet to the Scriptures. The succession so much pleaded by the writers of the primitive church was not a succession of persons in apostolic power, but a succession of apostolic doctrine' (*Irenicum*). The great distinctive doctrine of the B. is, and always has been, that of a purely spiritual membership, without any privileges of birthright, without an involuntary membership such as that which infant baptism may impose, and without any dictation or interference from the state. They contend that the liberties with which God has endowed a little child should not be invaded, even by his parents, in forcing him into any church relation to which he never assented; while as to the dedication of their children to God by prayer and a holy example, and by every appliance of religious instruction, this they practice with sacred awe. Further, they hold that age has nothing to do with Christian discipleship, which is purely a matter of perception and responsibility, and that, therefore, all religious choice must be left to the child's convictions. It seems to them that infant baptism, in some undefined and undefinable sense, puts a little child into the church of Christ, and then leaves him outside the discipline and the ordinances of the church, and without its watch and its care. A Baptist believes that if his little child dies while he is irresponsible by reason of his tender years, he will be saved through the redeeming love of Christ; and that if a baptized child dies and is saved, it will be in the same gracious manner. He also believes that if the child reaches the age of responsibility, and wishes to become a servant of Christ, he should enpoy the high and inalienable honor of assum-

ing Christ's yoke under the dictates of sanctified reason and manhood, and that this is his indestructible prerogative.

Some of these Baptist principles were found among the early Montanists and Novatians, and all of them were conserved among the ancient Petrobrusians (see HENRICIANS), and a large class of the Waldensians (see WALDENSES). They lived through centuries among the followers of Peter Bruis and Henry the Deacon (q.v.); they spread all through the Swiss valleys, in n. France, Italy, Holland, and Upper and Lower Germany. Space is lacking here to meet the unjust aspersions which were cast upon the B. of Germany, Holland, Switzerland, and Moravia, or to depict their sufferings. Drs. Dermont and Ypeig, reporting the result of their investigations to the king of Holland, say: 'The Baptists, who were formerly called Anabaptists, and in latter times Mennonites, were the original Waldensians, and have long in the history of the church received the honor of that origin. On this account the B. may be considered the only Christian community which has stood since the apostles, and as a Christian society which has preserved pure the Gospel through all ages.' Dr. Keller, for many years state archivist at Münster, and possibly a somewhat skeptical German, says: 'The more I examine the documents of that time at my command, the more am I astonished at the extent of the diffusion of Anabaptist views, *an extent of which no other investigator has had any knowledge.*' Their martyrology was enormous. Buckle says that 'in Holland and in Friesland, more than 30,000 persons have suffered death at the hands of justice, for Anabaptist errors (*Hist. Civ.*, I., p. 189). Motley put the number at nearer 50,000 and Brandt higher still. Motley also shows how the prince of Orange was wonderfully influenced by B. in securing religious liberty for the Netherlands, through the Articles of the Union of Utrecht (*Dutch Republic*, III., pp. 206, 207, 334, 412, 413, 415). The history of B. in the Orient and on the continent of Europe is a wonderful revelation to those who have never troubled themselves with the investigation.

We have several indications that in England and Wales Baptist principles obtained early footing. Collier says that in the middle of the 12th c. many infants were left unbaptized, despite the severity of the law. Several writers speak of a Baptist church at Chesterton as early as 1459, and Foxe records the burning of 19 Anabaptists in England in 1553. Several monarchs, especially James I., had driven what few of them there were out of the kingdom, and they had taken refuge chiefly in Holland. The first church which we find in England after his day is one organized in London 1612–14, of members who had returned from Amsterdam; and from that time their history in England is clear and traceable. This church was Arminian or General Baptist. The first Calvinistic or Particular Baptist church in England

was organized in 1633. These churches for a time seem to have practical affusion. Immersion was introduced among them in 1641, and soon became the universal practice.

The Baptists flourished remarkably through the period of the Commonwealth under Cromwell, stout upholder of religious liberty. After the Restoration, they suffered severe persecution, though not nearly so severe as under Henry VIII., Mary, and Elizabeth. Many ministers of state and officers of the army and navy under Cromwell were B., but afterward, until the time of William III., many of the B. suffered with John Bunyan in prison. Since that time they have had rest, have prospered, and produced some of the finest scholars and preachers in Great Britain, among whom may be named Charles Spurgeon and Dr. Joseph Angus, for more than 40 years pres. of Regents' Park College, London. Henry Havelock, the great Indian general, and the late Chief-Justice Lush were devoted members in the Baptist ranks.

The most noted chapter in Bapt. history is found in their marvellous growth in America. So far as is now known, Roger Williams founded the first Bapt. church in the new world. Williams was a clergyman of the Church of England, but was driven out of that country by the persecutions of Abp. Laud. He landed at Boston, Mass., 1631, and settled at Salem, where he soon rejected the union between the church and the state, and was banished from the colony. After wandering long in the wilderness, he founded the state of Rhode Island and in 1639 established a Bapt. church of 12 members at Providence. From 1684 onward a group of churches was established in and about Philadelphia, and in New Jersey, which in 1707 established the Philadelphia association, the most influential single body in the history of American Baptists. From these small beginnings the great body of American B. has sprung. Williams laid the divine right of religious freedom as the cornerstone of his commonwealth, declaring that all concerns of the soul were matters between man and his Maker, and that the state had no right to prescribe religion to any citizen — no right to punish him for following this religion or that, but that he was entitled to 'soul liberty' as freely as to the air which he breathed. This doctrine alarmed most of the American colonies, especially those of New England, N. Y., Va., and Ga., all of which except N. Y. had established religion by law. In N. Y., the B. were proscribed and driven from the colony by both Dutch and English rulers, and in New England, Va., and Ga., they were heartlessly whipped, fined, and imprisoned.

A long and fiery struggle ensued between the B. and the govts. of these colonies, which continued throughout the war of the revolution and the forming of the United States as a nation. When American independence was secured the new constitution provided (Art.

VI.) that congress should not impose 'religious tests on those who held office or public trusts under the United States,' but left it at liberty to impose such tests in other cases. This alarmed the B., who almost to a man had supported the revolution; and they called a convention to take resolute action in the case. This body met in Richmond, Va., 1789, Aug. 8, and sent a powerful protest and petition to Pres. Washington, asking his aid in securing religious rights. He thanked them for their patriotism; and Madison, with his approval, moved in congress that the constitution be so amended as to read: 'Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof.' This change was adopted by the states and is now a part of Art. I. No Baptist has since been persecuted in the United States; but the contest long went on in Mass., and not till 1832 were the B. in that state freed from unjust laws. In religious matters they scout all toleration as a usurpation which no man may assume, and demand 'soul liberty' as a natural right, given of God to men.

The English B. established their foreign mission soc. 1792, and the American B. organized theirs 1814. Both have had astonishing success.

BAPTISTS, ANTI-MISSION: see BAPTISTS, PRIMITIVE.

BAPTISTS, CAMPBELLITE: see DISCIPLES OF CHRIST.

BAPTISTS, FREE: sect which originated 1779 through a discussion among the Baptists in New Hampshire concerning the doctrines of Calvin. The founder of the body was Benjamin Randall, an uneducated man, but who possessed solid sense and deep piety. He was converted at Newcastle, N. H., when twenty-two years of age, through the preaching of the celebrated George Whitefield, and about four years afterwards, 1776, he united with the Calvinistic Baptist Church in Berwick. His difference with the regular sect occurred through his preaching a general atonement and the ability of sinners to accept Christ. After the new church was formed they desired to be known simply as Baptists, but they were called 'Free Willers,' and the denomination eventually united both names, terming themselves 'Free Will Baptists.' The causes leading to this association were two, the first being found in the Arminian tendencies which existed to some extent among the early Baptist churches. Generally these churches were Calvinistic, yet there were members and some ministers who, having belonged in England to that division of the body called 'General,' and having always been moderate Calvinists, and some of them Arminians, brought those views with them to this country, and sought to propagate them in the churches here. This course naturally awakened opposition, and indeed occasioned the separation. A second cause is found in the Antinomianism which spread to a considerable extent about that time, and which a quarter of a century later caused the sucession of the old-school Baptists.

Randall had been instrumental in the extension and revival of religion in Dover, N. H., the place of his birth, and also in other places, and on imbibing Arminian notions he dissented from the body with which he had connected himself. The Baptist church in Berwick met and considered his case, and withdrew fellowship from him.

There was not an ecclesiastical organization in America to which Randall and his followers could naturally ally themselves. On the special mode of baptism they were Baptists, but Baptists were Calvinists, while they were Arminians. Their first church was formed at New Durham, N. H., in 1780. Like all new sects, terms of reproach were used towards them. Besides the appellation by which they have since become recognized, they were called 'Randallites,' 'General Provisioners,' and 'New Lights.' The first quarterly meeting was organized among them in 1784, and the first yearly meeting of delegates from the quarterly meeting, in 1792. The general conference was formed in 1827; it now meets triennially. In the mean time there had arisen in Rhode Island and Connecticut a sect known as the 'Free Communion' B., a denomination which also owed its origin to Whitefield's preaching, and in 1841 this body united with the Free B. Different questions came up at the conferences for discussion, perhaps the most important of which was at the fifth conference, 1851, the subject of foot-washing as a religious ordinance, when the churches were given liberty to retain or give up the ordinance, as might be preferred. Many of them took this liberty and gave it up. This body has always held anti-slavery views, and it is a matter of history that, some years before the civil war, fellowship was withdrawn from 4,000 of its members in the state of North Carolina, on account of their being slaveholders. It is also related that 12,000 members in Kentucky, who sent delegates to the general conference, were for the same reason refused admission. The Free B. are a unit with the general body on the subject of baptism and in congregational church government, but they do not accept the doctrine of Calvinism. See BAPTISTS, GENERAL.

The Free B. deny personal unconditional election to eternal life in Christ as a consequence of an eternal decree; hence they have repudiated the doctrine of final perseverance, as explained in harmony with the Calvinistic theory, and hold that election is made sure by perseverance only. They also differ on the subject of communion, practicing what is known as 'open communion,' and not, like the regular B., regarding immersion as essential to the communion at the Lord's Table. In fact they do not insist on baptism as an indispensable scriptural pre-requisite to the Lord's Table. In this they differ from many others as much as from the great body of their Baptist brethren.

Prior to the war of secession, on account of their strong anti-slavery opinions, the Free B. had no churches in the South. Now, however, they have missionaries at various points, and a school

W. Va., Storer College. Their early ministers were men who lacked thorough collegiate training, having to depend for their education upon the ordinary facilities afforded by the New England common schools of the time. Now the denomination sustains 13 institutions of academic and collegiate grade, including Bates College, Lewiston, Me., with the Cobb Divinity School; and Hillsdale College, Hillsdale, Mich., with a theological department. Reports for 1896 showed 1,540 churches; 1,362 ordained ministers; 175 students studying for the ministry; 212 licensed preachers; 85,504 members, (over one-third confined to New England); total contributions for missions and education, $84,082, value of church property, $2,661,409. The publishing house is at Boston, Mass., and the leading church paper the *Morning Star*.

BAPTISTS, GENERAL: sect so called because they differed from the Particular or Regular Baptists in holding that Christ made general atonement for the entire race, and not merely in particular for those effectually called. The sect is Arminian in theology. They appeared in England early in the 17th c. At the beginning of the 18th c. the General B. in New England associated themselves in a yearly meeting. Churches having this belief were organized during the first half of that century in Md., Va., N. C., and S. C. Most of these subsequently joined the Calvinistic B. The first association in the west, where the denomination now has its entire strength, was effected in Ky. 1824. In 1830 the practice of open communion was adopted. In 1845 an article of belief was changed so as to indicate the salvation of infants and idiots; and another to read, 'He that shall endure unto the end, the same shall be saved,' instead of, 'The saints will finally persevere through grace to 'glory.' A general association was formed 1870. The dominating spirit is anti-Calvinistic, and the body is increasing. They are substantially in accord with the Free Baptists (q.v.) The denominational name General Baptists now applies to only a fraction of the body of Bapt. believers in a general atonement. Another and smaller fraction is known by the name *Six-Principle Baptists* (q.v.).—Number of churches (reports for 1902) 423; members 24,775; church property $201,140.

BAPTISTS, GERMAN: see TUNKERS.

BAPTISTS, OLD-TWO-SEED-IN-THE-SPIRIT PREDESTINARIAN: sect representing an extreme conservative Bapt. element, and found mostly in the s.w. states. 'Two-seed' indicates their belief in a seed of life and a seed of death; one appeared in man when he fell from his native holiness and brings forth death, the other is implanted by the Holy Spirit and springs up unto eternal life. Their creed embraces election, effectual calling, and perseverance; asserts that the church is a spiritual kingdom; enjoins foot-washing; declares that the punishment of the wicked will be eternal.—Number of churches (reports for 1902) 473; members 12,851; church property $135,230.

BAPTISTS, ORIGINAL FREEWILL: sect beginning in N. C., in the first half of the 18th c. Many of the early churches became Regular Bapt. churches. Those declining to unite with the Calvinistic associations came to be called 'Freewillers,' because of their doctrine of freedom of the will. Their distinguishing beliefs are that Christ freely gave himself for all; that God desires that all men shall repent; that all men may be eternally saved; that the ungodly are ordained to condemnation; that children dying in infancy are saved; that only believers should be baptized; and that the only baptism is immersion. They believe also in washing the saints' feet, and in anointing the sick with oil. Their operations are confined to the two Carolinas.—Number of churches (reports for 1902) 167; members 12,000; church property $57,005. See BAPTISTS, FREE.

BAPTISTS, PRIMITIVE (called also OLD-SCHOOL, or REGULAR, or ANTI-MISSION): sect named from their positive objection to human effort in religious affairs as derogating from the divine glory. Hence they oppose the establishment of Sunday schools, missions, bible-and educational societies, and other organizations, which they regard as unwarranted and unnecessary. The Chemung (N. Y.) assoc. took the initiative steps to formal separation 1835. The Baltimore (Md.) assoc. followed 1836, and the Warwick (N. Y.) assoc. 1840. A separation gradually took place. The articles of faith represent an extreme Calvinism: they comprise total depravity, election, reprobation, justification by faith and perseverance; they declare that the Lord's Supper and the washing of saints' feet are ordinances of the Gospel; that religious societies other than the church are human inventions and, that it is wrong to join them; and they require immersion of believers. The denomination is represented in 24 states and the Dist. of Columbia. In northern states it is strong only in Ill. and Ind. —Number of churches (reports for 1902) 3,530; members, 126,000; church property $1,394,883.

BAPTISTS, SEPARATE: sect which favored the Whitefield revival and separated from those who opposed it. Most of the original 'Separates' in various parts of the country long ago united with the regular Baptists (see SEPARATES). The sect now so named are in doctrinal agreement with the Free Baptists, holding to a general atonement, and rejecting the doctrine of election and reprobation. Number of churches—all in Indiana—(reports for 1902) 103; of members 6,479; church property, $9,200.

BAPTISTS, SEVENTH-DAY: sect differing from the regular Baptists in a single point only, being distinguished from that body and from nearly all other Christians, in continuing the observance of the Jewish Sabbath, the seventh day instead of the first day of the week. Their claim is that the Christian churches before the time of Constantine did not observe the first day as the Sabbath. Late in the 15th c. 'Seventh Day Keepers' appeared in Germany. In England soon after the Reformation they organized as a separate denomination,

bearing the name of 'Sabbatarians,' and eleven of their churches existed at the close of that century, of which only three remain. They appeared in this country in 1665, and about 1671 organized a church at Newport, R. I. Other churches were soon organized in that state, and in New York and New Jersey, several of which still exist. They began the establishment of yearly meetings with the 18th c., and their general conferences with the 19th c.—at first held only annually, now triennially. The name 'Seventh Day Baptists' instead of 'Sabbatarians' was adopted 1818. In 1845 they were in five associations, Ohio, Virginia, Eastern, Central, and Western. They are generally described as a people of ardent piety and great devotion. They favor total abstinence, and are generally reformatory in their methods. They have a publication society for printing and circulating tracts and books, and they support missionaries in Palestine and in China. The general conference held in 1878 had representatives by letter from 55 churches. In 1893 there were reported 8,450 members; 65 Sunday schools, with 729 officers and teachers and 5,100 pupils; 3 educational institutions (Salem College, Va., Milton College, Wis., and Alfred Univ., N. Y.); tract soc.; missionary soc., with foreign stations in China, Holland, and Austria; and a woman's co-operating board.

BAPTISTS, SIX-PRINCIPLE: small body of Baptist churches, holding Arminian views and believing in a general atonement; basing their faith on the six principles laid down by the apostle Paul, Hebrews, vi. 1, 2 viz., repentance, faith, baptism, laying on of hands, the resurrection, and the eternal judgment. As a rule their ministers are poorly educated and their churches lightly supported. Formerly they had some influence in Rhode Island, and their denomination is confined to that state, Massachusetts, New York, and Pennsylvania. In 1845 they had 19 churches, 14 ministers, and 3,000 members. Since then they have been gradually declining, and the last of their reports accessible, that of 1902, gives them a membership of 828, with 8 ministers and 12 organized churches.

BAPTISTS, UNITED: sect originating about the middle of the 18th c. in a separation—during the great revival movement in America led by George Whitefield—between those who favored and those who opposed the movement. The seceders were called Separates (q.v.), and those whom they left Regulars. After a time, some members of these factions came together, taking the name of United Baptists. The basis of union was nearly Calvinistic. Their articles of belief assert that Christ died to make atonement for sin; that sinners freely choose their condition; that God has elected a great multitude among all nations; that saints will persevere to the end; that baptism should be administered to believers only, and by immersion; and that foot-washing ought to be practiced by all baptized believers. This sect is found mostly in the southwestern states. Number of churches (reports for 1902) 204; members, 13,209; church property, $55,350.

BAPTIST YOUNG PEOPLE'S UNION OF AMERICA: fraternal union of all young people's organizations in the Bapt. churches; organized 1891, July 8. Of these, bearing a diversity of names, the earliest began about 1859. With the rise of the Christian Endeavor (q. v.) movement, many of them became societies of Christian Endeavor, while many new societies were organized according to the Endeavor plans. In 1886–7 the 'Loyalist movement' was begun to prevent the further spread of Christian Endeavor societies in Bapt. churches by encouraging instead a strictly denominational organization. Serious division was threatened, and a conference of leaders met at Philadelphia 1891, Apr. 22, which found basis of agreement and brought harmony of plans, pursuant to which at Baptist young people's convention of 2,900 enrolled delegates at Chicago organized the B. Y. P. U. At this time there were by common estimate about 2,500 Bapt. Christian Endeavor societies, about the same number of Bapt. societies under various titles unidentified with the denominational movement, and about the same number strictly denominational.

The new Union found great favor and has had remarkable success: nearly every northern state has a state B. Y. P. U. It is growing rapidly in the southern states; and Canada is organized under two great Unions. The 6th international convention, Milwaukee, July 16–19, was attended by 8,000 enrolled delegates and 40 states and Canadian provinces were represented. No local name or constitution is enforced: Bapt. young people are simply urged to organize according to such methods as their own churches shall approve, and when so organized, to join these denominational Unions. The object is set forth in the common constitution, which, with little variation, all have adopted—'The unification of Baptist young people; their increased spirituality; their stimulation in Christian service; their edification in Christian knowledge; their instruction in Baptist history and doctrine; and their enlistment in Christian activity through existing denominational organizations.'—The Union is not executive but educational: it does not send out missionaries nor endow schools; but seeks to extend the knowledge of missions, to arouse interest in Bapt. schools, and to spread Bapt. literature among Bapt. young people. It is the only international organization of Baptists. It publishes a weekly religious paper, the *Young People's Union*, from its headquarters in Chicago. This is one of the most widely circulated Bapt. papers in the world. It is estimated that there are about 8,000 Young People's Societies with 400,000 members in the local organizations, including about 1,500 Junior societies, with about 40,000 members. The Union is governed by a board of managers representing all the states and provinces enlisted in the work. An executive committee at Chicago has immediate charge.

BAR, n. *bâr* [Fr. *barre;* It. and Mid. L. *barra*, a cudgel. a bolt: Celt. *barr*, the top, a high place; *barra*, a court of

justice: AS. *beorgan*, to shut in, to shelter: W. *bar;* Gael. *barra*, a bar, a spike]: an obstruction, hindrance, something in the way of progress, a barrier; a piece of metal, wood, or other solid substance that is relatively long and of small diameter, hence suited to form a barrier or obstruction: in specific uses—a counter having a rail over which liquors are sold; a rail dividing an assembly room, as the bar of the House of Commons; a similar rail in a court-room, where the lawyers stand; hence, the legal profession; also a place of judgment; a shoal or deposit that blocks the way in a harbor, river, etc.; in mining, a vein that cuts the lode, also a drilling or a tamping rod; in *carp.*, a heavy horizontal beam in a framework; also a division between panes in a window; a fence-rail that may be removed to make an opening in a fence; one of the curved divisions that collectively form a fire-grate; the upper part of a horse's gums, where the bit is fastened; a horizontal beam of wood, as a piece of gymnasium apparatus. V. to obstruct or close, as a passage-way; hinder or prohibit; to mark with bands or bars. BAR'RING, imp. (See BARRING OUT.) BARRED, pp. *bârd*. BAR'LESS, a. BAR'WISE, ad. *-wīz*. BAR'COMPASS, n. a beam-compass. BAR-CUTTER, n. a stout shears for cutting iron bars. BAR DIGGINGS, in placer mining, a place in a river's bank where gold is sought. BAR-GOWN, n. a lawyer's gown. BAR IRON, wrought iron rolled into commercial form in bars that may be handled conveniently; rod iron. BAR-LATHE, n. a lathe with a heavy triangular bar on which the heads slide. BAR-LIFT, n. a bar arranged as a lever for raising a heavy window. BAR-LOCK, n. a lock that closes with a bolt or bar. BAR-LOOM, n. a loom for weaving ribbons. BAR-MAGNET, n. a magnet that is straight. BAR'MAID, n. a young woman who attends a bar and sells liquor. BAR-NET, n. a net for guiding fish into a wing-pond. BARRICADE, n. *băr'rĭ-kād'* [Sp. *barricada*, Gael. *barrach*, heaped up branches, brushwood: F. *barrer*, to stop the way]: an obstruction hastily thrown up; an impediment; a defense: V. to set up a barrier; to fortify; to secure. See BARRICADES. BAR'RICA'DING, imp. BAR'RICA'DED, pp. BAR'RICA'DER, n. one who. BARRIER, n. *băr'rĭ-ėr* [F. *barrière*—from OF. *barre*, a bar]: an obstruction forming a boundary; a limit; defense; line of separation. BARRISTER, n. *bar'rĭs-ter* [mid. L. *barristārĭŭs*]: one who pleads at the bar in a court of law; an advocate. See BARRISTER. BAR-ROLL, n. a bookbinder's rolling tool for forming bars or heavy lines on a book-cover. BAR'ROOM, n. a place for the sale of liquor at retail. BAR-SHEARS, n. a bar-cutter. BAR-SHOE, n. a horseshoe having a cross-bar at the rear to protect the open part of the frog from injury. BAR-SHOT, n. a pair of cannon-shot joined by a bar, formerly used to cut the rigging, etc., of an enemy. BAR SINISTER, *sĭn'ĭs-tėr* [L. *sinister*, on the left hand or side]: in *her.*, mark of bastardy denoted by a bar on the left-hand side of the escutcheon, called the bastard-bar. See BEND. TRIAL AT BAR, before the judges of a particular court, who sit

together for that purpose *in banc* (q. v.). See PLEA; PLEADING; FELONY; TREASON; ADVOCATE; ATTORNEY.

BAR, or BARR, in Heraldry: one of those more important figures or charges in heraldry which are known as *ordinaries*. By the heralds of Britain, the ordinaries, or as, by way of eminence, they are called, the 'honorable ordinaries,' are commonly reckoned as ten, the subordinaries, or minor charges, being greatly more numerous. The B., like the Fess (q. v.), is formed by two horizontal lines passing over the shield, but it differs from it in size, the fess occupying a third of the shield, the B. only a fifth. There is this further difference, that the fess is confined to the centre, while the B. may be borne in several parts of the shield. There is a diminutive of the B. called the Closet, which is half a B.; and again of the closet, called the Barrulet, which is half a closet, or the fourth part of a bar.—BARGEMEL is a double bar, from the French *jumeau*, f. *jumelle, a twin.*

BAR, in Hydrography: a bank opposite the mouth of a river, which obstructs or *bars* the entrance of vessels. The B. is formed where the rush of the stream is arrested by the water of the sea, as the mud and sand suspended in the river-water are thus allowed to be deposited. It is thus that deltas are formed at the mouths of rivers. The navigation of many streams (as the Danube) is kept open only by constant dredging or other artificial means.

BAR, in Music: a line drawn across the staff, to divide the music into small portions of equal duration; each of these small portions is itself also called a *bar*.

BAR, PLEAS IN: see PLEADING: PLEA.

BAR, TOLL: see TOLL.

BAR, TRIAL AT: see TRIAL AT BAR.

BARADA: see BARRADA.

BARAGUAY D'HILLIERS, *bâ-râ-gā'dēl-yā'*, ACHILLE: French general: 1795, Sep. 6—1878, June 6; b. Paris; son of Louis. He rose rapidly through the inferior military grades, and became governor, 1832, in the military school of St. Cyr, where he suppressed a republican conspiracy. After he had served in more than one campaign in Algeria, he was promoted to the rank of lieut.gen., 1843, Aug. 6; and in 1847, he was made inspector-general of infantry. After the revolution of 1848, Feb., he was chosen a member of the national assembly, in which he joined the party of reaction, and was in favor of the restriction of the press. In 1849, Nov., he went to Rome, as commander-in-chief of the French army sent to sustain the authority of the pope. He returned, 1850, and obtained, 1851, Jan., the command of the army of Paris, in the place of Changarnier. B. concurred in the policy of the *coup d'état* of 1851, Dec., and was made a member of the Consultative Commission. During the Crimean war, he received the command of the French expeditionary corps of the Baltic, and co-operated with the British fleet in the

capture of Bomarsund. He was afterwards made a marshal of France, and commanded in the Italian war of 1859. In 1871 he was made president of the court appointed to investigate the conduct of the generals who surrendered fortresses during the Franco-Prussian war.

BARAGUAY D'HILLIERS, Louis: a distinguished general of the French empire: b. Paris, 1764; d. Berlin. After serving under Custine and Menou, he received from Napoleon an appointment in the army of Italy, and was a sharer in all the success of the campaigns of 1796,7. He was made a general of division; and in virtue of Napoleon's treaty with the Venetian Republic, 1797, May 16 commandant of Venice. B. accompanied the expedition to Egypt; afterwards successively held appointments in the armies of the Rhine, and the Tyrol, and in Catalonia He headed a division in the Russian campaign of 1812; but on the retreat he incurred the displeasure of Napoleon. He was sent as governor to Berlin, where he soon after died of grief and exhaustion.

BARALIPTON, n. *băr-a-lĭp'tŏn* [a word composed of symbolical letters, *A* representing a universal affirmative; *I*, a particular affirmative, and *ton* being used for euphony]: in *logic*, the first indirect Mode of the first Figure of Syllogisms. A syllogism in B. is one in which the first two propositions are universal affirmatives, and the third a particular affirmative; the middle term being the subject of the first and the attribute of the second. The following is an example of B.: BA. Every evil ought to be feared. RA Every violent passion is an evil. LIP. Therefore, something that ought to be feared is a violent passion.

BAR'AS KHOTUN', or Bars Khotan': ruined city on the banks of the Kherlon, one of the head-streams of the Amur, in the Mongol country. Some suppose it to have been built by the Emperor Kublai; others by Toghon Timur, 14th c., after the expulsion of the Mongols from China. The remains of the mud-walls show a city 5 m. in circumference.

BARB, n. *bârb* [F. *barbe*—from L. *barba*, a beard]: a beard, or that which resembles it; the sharp shoulders of an arrow-head or of a hook to prevent its being easily drawn back again: V. to furnish with barbs. Barb'ing, imp. Barbed, pp. *bârbd*, furnished with barbs; bearded; armed. Bar'ber, n. [F. *barbier*]: one who shaves beards. Barber-surgeon, a barber who also performed the smaller operations of surgery, as bloodletting; an inferior surgeon.

BARB, n. *bârb* [Dut. *paard*, a horse]: a noble breed of horses cultivated by the Moors of Barbary, and introduced by them into Spain; less remarkable for beauty and symmetry, than for speed, endurance, abstinence, and gentle temper. Barbed, a. *bârbd*, accoutered, said of a horse.

BAR'BACAN: see Barbican.

BARBACENA, *bâr-bâ-sē'nâ:* a city of Brazil, in the province of Minas Geraes, 150 m. n.w. from Rio de Janeiro. It is situated on the top of two hills in the Sierra

Mantiqueira, and at an elevation of about 3,500 feet above the sea, so that, although within the tropics, it enjoys a mild climate. The streets are broad and straight, the principal ones paved and provided with footpaths. The houses are low, and have gardens behind. The inhabitants are chiefly engaged in gold-mining and in exporting coffee and cotton to Rio de Janeiro. B. is the centre of a productive district, the pop. of which is 12,000.

BARBADOES, *bâr-bā'doz:* most easterly of the Caribbees: residence of the gov.gen. of the British Windward Islands. See ANTILLES. The lat. and long. of its cap., Bridgetown, are 13° 4′ n., and 59° 37′ w. Its area is about 166 sq. m., or 106,240 acres—the remarkable proportion of 100,000 being under cultivation. Besides the capital, B. contains 3 other towns, all more or less in decay—Jamestown, Speights-town, and Oistin. B. affords no harbors, being almost encircled by coral-reefs, which here and there extend as much as 3 m. to seaward. Inside of the coral-reefs, the coast, excepting at two points, presents long lines of sandy beach—one of the most remarkable being Carlisle Bay with its exposed roadstead, on which Bridgetown stands. Aside from occasional attacks of yellow fever, the climate is healthful. In 1844, the fall of rain was 72 inches; and the temperature is said to have ranged only between 76¾° and 83½° F. Shocks of earthquake are sometimes felt, and thunder-storms are frequent and severe. But hurricanes are the grand scourge of Barbadoes. In 1780, one of them destroyed 4,326 persons, and property to the value of more than $6,600,000; and in 1831, another destroyed 1,591 persons, and property to the value of more than $8,000,000. Of the former of these, the violence appears to have surpassed all belief—the winds and the waves having carried a 12-pounder gun a distance of 140 yards.

Since 1834, date of the commencement of the apprenticeship under the imperial act of emancipation, the population, trade, and revenue, and general prosperity, have largely increased. Between 1833 and 1902, the revenue had increased from $104,875 to $899,860; the imports, from $2,408,050 to more than $5,100,000; the exports, from $2,041,815, to above $4,750,000 (sugar, $2,400,000); tonnage entered and cleared annually, over 1,000,000 tons. Being universally cultivated in regular plantations, the island affords no room for the 'squatting' of negroes on unreclaimed lands, as in Jamaica and other West India possessions. On this account, if from no other cause, the negro population have been compelled to labor diligently for hire, and are generally in a condition most creditable to their industry and prudence, contrasting favorably with some of the lower classes among the whites. Altogether, however, the Barbadians are a shrewd and clever people. B. is the see of a bishop. It contains also many well-endowed seminaries—Codrington College, in particular, having a revenue of $15,000 a year. B. was first colonized by the English, 1625, having previously been depopulated by the Spaniards. The peace of B. was seriously dis-

turbed in 1876, by riots occasioned by the proposed con federation of the Windward Islands, in which several lives were lost, and great damage done to property. Pop. 1834 (date of emancipation), 102,231; (1901) 195,588; average 1,092 to a sq. mile. Cap. Bridgetown; pop. over 25,000.

BARBADOES CEDAR, n.: name of a cedar or juniper, *juniperus barbadensis*, a native of Florida and other warm parts of America.

BARBA'DOES CHER'RY: name in the West Indies for the fruit of two small trees, *Malpighia urens* and *M. glabra*, which are cultivated for its sake. Clusters of fruit are produced from the axils of the leaves. The fruit of *M. urens* is small, that of *M. glabra* is like a Mayduke cherry in size and appearance, but inferior in flavor. Each fruit contains three triangular seeds. The leaves of *M. urens* have stinging hairs on the under side. See MALPIGHIACEÆ.

BARBADOES EARTH: a deposit of fossil Polycistina found in Barbadoes.

BARBADOES FLOWER-FENCE, or BARBADOES PRIDE: the *Poinciana pulcherrima*. It belongs to the Leguminous order, and the sub-order *Cæsalpinieæ*. It is a low, spiny tree with an odor like savin, a native of the tropics of both hemispheres. In Barbadoes it is used for fences.

BARBADOES GOOSE'BERRY (*Pereskia aculeata*): a pleasant West Indian fruit, produced by a plant of the nat. ord. *Cacteæ* (q.v.), with a round stem, thick, flat, alternate leaves, and large, strong spines. The fruit has expectorant properties.

BARBADOES LEG: apparently identical with the *Elephantiasis of the Arabs;* a disease characterized by hypertrophy of the skin and of the subcutaneous areolar tissue. Notwithstanding its name, it may affect the arm, female breast, etc. It begins with acute febrile symptoms, and inflammation of the superficial lymphatic vessels. The part swells, and becomes uneasy from tension, the glands being especially large and hard. The skin varies in appearance, being sometimes white and shining, and in other cases of a dark color, and studded with projecting veins. The swelling is sometimes very great, and quite hard. In some parts of the body skin which would naturally weigh less than a couple of ounces is thus converted into a tumor weighing from 100 to 150 lbs. The disease is endemic in the tropics; and in cases observed in temperate climates, it always appears that the disease commenced in a hot country.

Iodine is recommended by some doctors, and well-regulated pressure by others. The leg has been amputated, in consequence of the annoyance caused by its great weight, but this should be regarded as an ultimate resource, and ligation of the femoral artery, which often causes great subsidence of the swelling, should be first tried.

BARBADOES TAR: a mineral tar of commerce found in several of the West India Islands.

BARBARA, n. *bâr'ba-ra* [a word of Latin form, having no connection with *barbarous things*, but constructed in order that its letters may be used as symbols]: in *logic*, a mnemonic word, designating the first Mode of the first Figure of Syllogisms. See SYLLOGISM and MOOD in logic.

BARBARA, *bâr'ba-ra*, SAINT: suffered martyrdom at Nicomedia, in Bithynia, about 236, or, according to other accounts, at Heliopolis, in Egypt, about 306; was of good birth, and well educated by her father, Dioscorus. To avoid disturbance in her studies, he had a tower built for her, where she spent her youth in the deepest solitude. While in this retirement, she was led, through Origen, as is said, to embrace Christianity. Her father, a fanatic heathen, learning his daughter's conversion, and failing to induce her to renounce Christ, put her to death. Scarcely was the deed done, when he was struck with lightning. Hence St. B. is to this day prayed to in storms. For the same reason, she is the patron saint of artillery. St. B.'s day is Dec. 4.

BARBA'REA: see CRESS.

BARBAREL'LI, GIORGIO: see GIORGIONE.

BARBARIAN, n. *bâr bā'rĭ-ăn* [Gr. *bar'bărosʼ*; L. *bar'bărus*, rude—a word imitative of the confused sound of voices conveying no meaning, by repeating the syllables *bar, bar:* F. *barboter*, to mumble, to mutter]: *originally*, one who utters a confused jargon of unintelligible sounds; a rude savage man; an uncivilized man; a foreigner: ADJ. belonging to a savage; uncivilized. BARBARIC, a. *bâr-băr'ĭk*, pertaining to semi-civilized or uncivilized nations. BAR-BARISM, n. *bâr'bă-rĭzm*, an impropriety of speech; an uncivilized state; rudeness of manners BARBARITY, n. *bârbăr'ĭ-tĭ*, extreme rudeness; cruelty, like a savage; inhumanity. BARBARIZE, v. *bâr'bă-rīz*, to make barbarous. BAR'BARI'ZING, imp.: ADJ. having a tendency to render barbarous. BAR'BARIZED. pp. *-rīzd*. BARBAROUS, a. *bâr'bărŭs*, uncivilized; savage; ignorant; cruel. BAR'BAROUSLY, ad. *-lĭ*. BAR'BAROUSNESS, n. the state or quality of being barbarous.—SYN. of 'barbarous': inhuman; cruel; brutal; savage; uncivilized; unlettered; uncultivated; untutored; ignorant; ferocious.

BARBA'RIAN: among the Greeks, as early as the time of Homer, signified one who could not speak the Greek language; and this restricted signification was not wholly obsolete even in the age of Plato, for the latter divides the entire human race into *Hellenes* and *Barbaroi*. The Greeks, who had always a proud consciousness of their superior intellect and privileges, employed the term to designate the character of their enemies. Subsequently, when Rome, under Augustus, became the mistress of the world, the word was applied to all the Germanic and Scythian tribes with whom she came into contact. In modern times, B. signifies savage, uncivilized, or ignorant.

BARBAROSSA, *bâr-ba-rŏs'a*, ARUCH or HORUC: son of a renegade of Lemnos, and a noted pirate. Having by his success in piracy on the coast of Barbary made himself master of 12 galleys stoutly manned with Turks, he assisted Selim, King of Algiers, in driving the Spaniards out of that country, and, having taken possession of the capital, put Selim to death and mounted the throne himself. He died in 1518.

BARBAROSSA, HAYRADIN or KHAYR EDDIN: younger brother of the preceding; d. 1546. He surrendered the sovereignty of Algiers to Selim I., Sultan of Turkey, in exchange for a force of 2,000 janissaries and the title of Dey; and made himself master in Tunis, but in 1535 Emperor Charles V. besieged and captured the city and liberated a vast number of Christian slaves. He was made captain pasha, or high admiral of the Turkish fleet, in 1537, and in this capacity he distinguished himself by a long course of exploits against the Venetians and Genoese.

BARBAROS'SA: see FREDERICK I.

BARBAROUX, *bâr-bâ-rô'*, CHARLES: 1767–94, June 25; b. Marseille: one of the most distinguished and energetic of the Girondists; elected to attend the Constituent Assembly at Paris, he opposed the court, and took part with the minister, Roland, then out of favor. After the events of Aug. 10, he returned to his native town, where he was received with enthusiasm, and chosen delegate to the convention. In the convention, he adhered to the Girondists, and belonged to the party who, at the trial of the king, voted for an appeal to the people. As B. boldly opposed the party of Marat and Robespierre, and even directly accused the latter of aiming at the dictatorship, he was, 1793, May, proscribed as a royalist and an enemy of the republic. He wandered about the country, hiding himself as he best could, for thirteen months, when he was taken, and perished at Bordeaux by the guillotine, 1794, June 25. B. understood the revolutionary crisis much better than the most of his party. Had the Girondists generally possessed anything like his energy and sagacity, the Jacobins must have succumbed, and much bloodshed

and horror would have been spared to France and the world.

BARBARY, *bâr'ba-rĭ*: extensive region in n. Africa, comprising the countries known in modern times under the names of Barca, Tripoli Proper, Fezzan, Tunis, Algeria, and Morocco, together with the half-independent province of Sus; and in ancient times, under the names of *Mauritania, Numidia, Africa Propria,* and *Cyrenaica.* It stretches from Egypt to the Altantic Ocean, and from the Mediterranean to the Desert of Sahara, or between long. 10° w. and 25° e., and lat. 25°–37° n. The n.w. of this region is divided by the Atlas Mountains into two parts: the n. comprising Morocco, Algeria, and Tunis; the s. a half-desert region, called Belud-el-Jerid, the country of dates. Though pertaining geographically to Africa, B. is not African in its characteristics; but in climate, flora, fauna, and geological configuration, belongs to that great region which forms the basin of the Mediterranean. It is watered by many small streams, which either flow into the Mediterranean or into the salt-lakes on the edge of the Desert, according as they rise on the n. or s. slopes of the Atlas Mountains. A large portion of the country is capable of cultivation, and sandy or rocky tracts are rare, except on the s. margin. During the times of the Carthaginians, Greeks, and Romans, it was richly fertile, and all the natural conditions of its ancient productiveness still remain.—For an account of the climate, geology, productions, etc., see the various countries.

Among the people, besides the French and other Europeans, seven distinct races may be enumerated: Berbers (or Kabyles), Moors, Beduins, Jews, Turks, Kuluglis, and Negroes. The Berbers and Beduins inhabit the open country; the Moors reside in towns. Most of the Berber tribes are either wholly free, or subject to the mere nominal jurisdiction of native chiefs, kaids, judges, etc. The Beduins luxuriate in equal liberty. Jews had settled here in ancient times, but the greater number of that race immigrated when the Moors were expelled from Spain. The Turks entered B. in the 16th c. They form the dominant race in Tripoli and Tunis, but never established themselves permanently in Morocco. Their sway in Algeria was brought to an end by the French. The Kuluglis (the children of Turks by native mothers) are excluded from all the paternal rights and privileges. The negroes are not natives of B., but are brought thither as slaves, principally from Sudan and Guinea. They are for the most part domestic slaves. The population, exclusive of Jews and Christians, is about 11,000,000, all Mohammedans. Arabic is the language of commerce and intercourse, and in Morocco, the language of government, and the mother-tongue of Beduins, Moors, and even Jews; but in Tripoli and in all the regions in which the Turks are still dominant, the language of government is Turkish. The Berbers Proper, or Kabyles, especially in the highlands,

to which they have been driven by foreign conquerors, use a peculiar speech among themselves.

In the oldest historical times, we find the Mauri (the ancestors of the modern Moors) mentioned as residing in the n.w. of B., the Numidians in the interior and eastern parts, and the Phœnician colonies on the coasts. These last people formed settlements and founded cities—among them Utica, Hippo, Hadrumetum, Leptis, and afterwards Carthage, about B.C. 1000. It does not appear that they ever penetrated far into the interior. Confining themselves to the coast between the Great Syrtis and the Straits of Gibraltar, they maintained commerce with the people of the interior and the seaports of the Mediterranean. In B.C. 7th c. the Greeks founded Cyrene, considerably to the e. of Carthage, and colonized the plateau of Barca, now styled Jebel-el-Achdar by the Arabs. While the Phœnician colonies held sway on the coast, the Mauri and the Numidians were divided into several independent tribes, and, like their neighbors the Gætuli, were wholly uncivilized. After the second Punic war, the Romans extended their sway over Carthaginian Africa, which became a Roman province at the close of the third Punic war, when the city of Carthage was sacked and destroyed. Numidia was 'annexed' after the victory over Jugurtha, and Mauritania after the defeat of King Juba, the ally of Pompey's party. The son of Juba, bearing the same name, was allowed to reign as a nominal sovereign by Augustus; but Mauritania was, in fact, a Roman province. Thus, the Romans had acquired a territory in Africa extending from the Great Syrtis to the Atlantic (corresponding to the modern states of B.), which formed some of the largest and most flourishing provinces of their vast empire. Everywhere they built large towns, whose extensive ruins are still to be seen scattered over the whole land, even to the verge of the Desert; as, for instance, those at El-Haman, in the regency of Tunis, at Sava, Musulupium, and especially the splendid city of ruins, Lambasa, not far from the Desert of Sahara. The Romans had, in general, only two legions, numbering 24,000 men, in their African provinces; nevertheless, their authority was uncontested, and they were enabled to undertake important works, such as the cisterns and aqueducts at Rusicada, Hippo, and Cirta, and the temples and amphitheatres of Calama and Anuna, which clearly show that the inhabitants enjoyed the benefits of a safe and powerful civilization.

Under Constantine, n. Africa was divided into the several provinces, Mauritania-Tingitana, Mauritania-Cæsariensis (e. of the former), Mauritania-Sitifensis, Numidia, Zeugitania, Byzacium, Cyrenaica, and the Regio Syrtica. At the division of the empire, the whole of these provinces, with the exception of the last, fell to the share of the Western Empire. About this time, Christianity was promulgated in Africa, and with such success, that in the three Mauritanias there were more than 160 dioceses. As Roman power declined in Europe, the consequences were severely

felt in the African provinces. Religious disturbances, native revolts, and the ambitious aspirations of the Roman governors after independence, loosened the political bands which bound the provinces together, and made them an easy prey to the Vandals, who landed in Africa A.D. 429, under the ferocious Genseric, and in an almost incredibly short time overran the country, which they savagely misgoverned until 533, when they were defeated by Justinian's great general, Belisarius. Meanwhile the Numidians and the Mauri had made themselves masters of the interior and of the coast of Mauritania-Tingitana, and the Greek-Roman territories were restricted to the neighborhood of Carthage and some points on the coast. The whole country of B. was thus made an easy prey for the Arabs, and in 647, Abdallah-ben-Said, with 40,000 fanatical Mohammedans from Egypt, defeated and slew the Greek prefect Gregorius, at Tripoli. He did not, however, follow up his victories; but in 665–670 the Arabian general, Akbah, conquered the coast-towns of Tripoli, founded Cairo, and extended his sway almost to the Desert. Hassan, the general of the Caliph Abd-el-Malek, 692, stormed, plundered, and destroyed the new Carthage, and, in fact, annihilated the Greek-Roman dominion in Africa. In the course of less than a century, the greater part of the native tribes were converted forcibly to the faith of Islam. In 789, the w. provinces separated themselves from the others, and Edris-ben-Abdallah founded there the dynasty of the Edrisites. After 800, when the governor, Ibrahim-ben-Aglab, declared himself independent, and founded the dynasty of the Aglabites, Africa was lost to the caliphs. From this time to 1269, the changes of dynasty in B. were frequent, with the result that independent states arose in Algeria, Oran, Bugia, Tenez, etc. About this time, also, began the reaction of the Christian world against Mohammedanism in n. Africa and Spain. St. Louis undertook an expedition against Tunis. The Moors were, by and by, expelled from Spain, and settled themselves on the coast of n. Africa, there to begin that course of piracy by which they became odious to Europe, first as a fierce retaliation against their Christian persecutors, but ultimately as a barbarous profession. As early as the time of Ferdinand the Catholic, the Spaniards sought to check their insolent ravages, and landed in Africa on several occasions, capturing the ports of Ceuta, Melilla, Oran, Bugia, the island before Algiers, and Tripoli. The Portuguese landed on the coast of Morocco, where at first they had great success; but they were ultimately compelled to leave the country. After various changes of fortune, Algiers, Tunis, and Tripoli were brought under the government of the sultan. Since 1830, however, the first of these (see ALGERIA) has been under French sway, and since 1882 Tunis (q.v.) also; while Tripoli is only nominally dependent on the Turkish ruler. A similar fate, at a much earlier period, befell the w. part of B., where the successors of the Arabian Sherif,

Mula-Mehemed, overthrew the kings of Morocco and Fez, and established the Sherif dynasty, which rules to the present day over these lands. The population of B. includes the Berbers, who are indigenous, Moors, Arabs, Jews, Turks, and the Blacks. See ALGERIA; MOROCCO; etc.

BAR'BARY APE, PIG'MY APE, or MA'GOT: a small species of ape or tailless monkey, interesting as the only one of the monkey-race found in Europe. The only European locality, however, in which it occurs is the Rock of Gibraltar, and it is said to have been originally brought from n. Africa. It inhabits the precipitous sides of the Rock, inaccessible to human foot, and has a certain measure of protection from firearms in return for the amusement afforded by its manners. It is gregarious, and large numbers are often seen together, the females carrying their young upon their backs. In some parts of n. Africa, the B. A. is extremely abundant, inhabiting rocky mountains and woods. It is very agile in passing from tree to tree, and its bands often plunder gardens, one of their number keeping careful watch. It feeds on fruits, roots, etc.; and its fondness for eggs is supposed to have given rise to the ancient story of the battle of the pigmies and the cranes. It is of a greenish-gray color, paler underneath; and in size resembles a large cat. The characters agree with those of the genius *Macacus* (Wanderoo Monkey, q. v., etc.), except that the tail is reduced to a mere tubercle. The muzzle is somewhat elongated, although not nearly so much as in the baboons, with which this ape has sometimes been classed, and the facial angle is much higher than in them. The face is almost naked, and somewhat wrinkled. The ears are in form not unlike human ears. The eyes are round, reddish, and of great vivacity. The B. A. is one of the monkeys most frequently seen in captivity; and possessing a considerable degree of intelligence, is capable of being trained to many tricks, if it is taken young; the older ones are often sullen and mischievous. It usually walks on four feet, although it can be trained to stand or walk, in a more awkward manner, on two. It is filthy in its habits.

BAR'BARY GUM, n.: gum of the *Acacia gummifera*, a native of Mogador, Morocco.

BARBASTEL, or BARBASTELLE, n. *bâr'bas-tĕl* [F. *barbastelle*—from *Barbastro* in Aragon]: a bat, the *Plecotus barbastellus*. It is of a deep brown color, with the end of each hair yellow. Found in France and Germany. See BAT.

BARBASTRO, *bâr-bâs'trō:* walled town of Spain, province of Aragon; on the Vero. It has a cathedral with some paintings by Antonio Galceran. Pop. (1901) 8,300.

BARBATE, a. *bâr'bāt*, or BARBATED, a. *bâr'bā-tĕd* [L. *barbātus*, having a beard—from *barba*, a beard]: in *bot.*, bearded. BARBULE, n. *bâr'būl*, a very minute barb or beard.

BARBAULD, *bâr'bawld*, ANNA LETITIA: 1743, June 20

—1825, Mar. 9; b. Kibworth-Harcourt, Leicestershire, where her father, the Rev. John Aikin, a dissenting minister, kept an academy. Her private education, the religious influence of her home, and secluded life in the country, early developed her natural taste for poetry; but not until 1773 were her poems published. Encouraged by the demand for four editions during the year, she, with her brother, published, the same year, *Miscellaneous Pieces in Prose* (Lond. 1773), which passed through many editions. In 1774, she married the Rev. Rochemont Barbauld, a dissenting minister at Palgrave, Suffolk, in which village the newly married pair opened a boarding school for boys, which soon gained celebrity through the literary fame and the assiduity of Mrs. B. During the ten years of her work in this school she published *Early Lessons for Children*, and *Hymns in Prose*, works often reprinted for youthful readers, and translated into several languages; also *Devotional Pieces*. In 1792, she began, with her brother, the well-known series, *Evenings at Home*, which were finished in three years—her brother writing the most of them. In 1795, she edited Akenside's *Pleasures of Imagination*, and Collins's *Odes*, prefixing to each a critical essay. In 1804, she began to edit a selection from the *Spectator, Guardian, Tatler*, etc.; and in 1810 published a collection of the British Novelists, the task of editing which she had undertaken to divert her mind from her loss in the death of her husband two years previously. *The Female Spectator* (Lond. 1811) contains a selection from her writings. Her last poetical effort was an ode, entitled *Eighteen Hundred and Eleven* (Lond. 1812). All her compositions are characterized by simplicity of feeling, an easy, flowing style, and pure and elevated sentiment, and give token of a mind well versed in classical literature. Her life was written by her sister, Lucy Aikin, also known as an authoress, and was prefixed to the collection of the *Works of A. L. Barbauld* (2 vols., Lond. 1825). Lucy Aikin also published Mrs. B.'s *Legacy for Young Ladies* (1826). See Miss Thackeray's *Book of Sibyls* (1883).

BARBECUE, n. *bâr'bĭ-kū* [F. *barbe-à-queue*, from snout to tail: Sp. *barbacoa*]: in the *W. Indies*, a term used for dressing a hog whole by splitting it to the backbone and laying it upon a gridiron above a fire, which also surrounds it; on coffee estates, a floor for drying the bean: V. to roast or dress a hog whole, or any other animal, in some way. BAR'BECUING, imp. BARBECUED, pp. *bâr'bĭ-kūd*.

BARBED AND CRESTED: heraldic terms, by which the comb and gills of a cock are designated, when it is necessary to particularize them as being of a different tincture from the body. The common English term is *Wattled and Combed*, gules, or whatever else the tincture may be.

BARBED WIRE: wire having short points or barbs every few inches of its length, for forming a fence or enclosure, so that animals feeling the punctures will not

try to break through. It is formed of a single wire with points twisted on, and also of double wire.

BARBEL, n. *bâr'bĕl* [Dut. *barbeel;* OF. *barbel*—from L. *barba*, a beard], (*Barbus*): genus of fishes of the family of the *Cyprinidæ* (q.v.), differing from *Cyprinus* (Carp, Gold-fish, etc.) in the short dorsal and anal fins, in having one of the rays of the dorsal fin strong and serrated, and the mouth furnished with four soft barbules (whence the name B., from Lat. *barba*, a beard), two near the point of the snout, and one at each angle of the mouth. The upper jaw also extends considerably beyond the lower. The species are numerous. Like the other Cyprinidæ, they all are inhabitants of fresh water, and generally of muddy ponds and rivers, where they seek food by plowing up the mud with their snouts, like swine, and are said often to seize the small fishes which come to share with them the worms and insects of the mud. They also feed upon the leaves and roots of aquatic plants.—The common B. (*B. vulgaris*) is abundant in many of the rivers of the temperate parts of Europe. It is the only species found in Britain and only in some of the still and deep rivers of England. It is very abundant in the Thames, frequenting the weedy parts of the river in shoals in summer, and seeking the deeper water in winter, becoming so torpid during cold weather, that the fishermen sometimes take it with the hand, or by pushing it with a pole into a small net fastened to an iron hoop. It grows to a large size, sometimes 3 ft. in length, and 15 to 18 lbs. in weight; it is of a rather long shape, in section nearly circular; the general color of the head and upper part of the body, greenish brown, becoming yellowish green on the sides; the belly white, the tail somewhat forked, and of a deep purple color. It affords sport to anglers, but is a very coarse fish, and little used for food except by the poor, who often boil bacon with it to give it a relish. The larger barbels are esteemed the best. The roe has poisonous qualities, although its effects are disagreeable rather than permanently injurious.

The B. is a ground feeding fish, grubbing on the bottom for his sustenance. The baits principally used to capture him are worms and maggots, greaves, and cheese; and the means of angling for him are chiefly with a dead-line, called a ledger (with a perforated leaden bullet), or with float-tackle. The rod for ledger-fishing is short and stiff; the hook about No. 5 or 6 in size; in float-fishing the tackle is finer and the hook smaller. The weight, or the float, is so arranged that the bait lies near the bottom. From 18 to 20 hours before angling for B., it is desirable to bait the place to be fished, for the purpose of drawing the fish together. The B. may be said to be gregarious; it spawns in May or June, choosing some gentle shallow for that purpose, but soon recovers its strength. About the end of July, the B. seeks the deep rapid streams, and may be seen vigorously springing from the water in his endeavors

to rid himself of the parasitical insects which attach themselves to him during his quiescence. Here he remains the greater part of the summer and autumn. Frosty weather renders the B. torpid, and he takes shelter under some large stone or weed, where he can lie up during the winter. Although the B. is by no means an estimable fish for the table, it is much used by the Jews in their fasts and festivals.

Another species, called the Binny, or B. of the Nile, is very abundant in that river; attains a very great size, 70 lbs. or upwards; is much esteemed for food; and is taken by hooks baited with dates steeped in honey. A number of baited hooks, each attached to a separate strong line, are enclosed in a mass of clay, flour, dates, etc., which is sunk in the river, and to which, as it begins to dissolve, the binnies are attracted; when boring into it with their snouts, and devouring the dates, they are caught. The fish being generally hooked by the projecting upper jaw, is allowed to remain in the water, the line being fastened on shore, and is taken out when wanted for immediate use.

BARBER [see BARB]: one who shaves beards and cuts or dresses the hair. Barbers are of great antiquity, at least for shaving a portion of the head: see Ezek. v. 1. Barbers at one time acted as a kind of surgeon, and had a higher social position than now. See BARBER-SURGEON. Anciently one of the utensils of the B. was a brass basin, with a semicircular gap in one side to compass a man's throat to prevent soiling of the clothing in applying lather to the face; still in use in some towns in Europe as a B.'s sign. BARBER'S ITCH. Two distinct diseases of the skin are known by this name—one of a parasitic nature, the other not parasitic. In the latter there is an inflammation of the hair follicles characterized by the formation of papules and pustules pierced by hairs. It affects the hairy part of the face and runs a chronic course. It is more inclined to affect the upper lip and upper parts of the face. The more important disease is the *Tinea barbæ*, or parasitic disease. Here the hair follicles are infected by a fungus, the *trichophyton*. It is a form of ringworm of the beard. It affects the lower part of the face and neck, causing itching, scaly eruptions that secrete a thick mucus and spread out ring-like from the centre. The disease is always contracted from another person or sometimes from lower animals. Uncleanly barbers' implements are the chief agents in its spread. In the early stages—the parasitic form—it is readily curable, but in the chronic stages it may prove very difficult to treat successfully.

BARBER, *bär'bėr*, EDWARD ATLEE: American archæologist: b. Baltimore, Md., 1851, Aug. 13. He was graduated at Williston Seminary in 1869, and was assistant naturalist in the U. S. Geological Survey in 1874–5. Subsequently he was engaged in gold-dredging. His writings

include a history of the ancient Pueblos; a large number of magazine articles on ceramics; *Pottery and Porcelain of the United States; Manual for Collectors of Blue China; Genealogies of the Barber and Atlee Families; Anglo-American Pottery* (1899–1901); *American Glassware* (1900); *Tulip Ware of the Pennsylvania-German Potters* (1903); *Marks of the American Potters* (1904); etc.

BARBER, Francis, American soldier: b. Princeton, N. J., 1751; d. Newburg, N. Y., 1783, Feb. 11. He graduated at Princeton in 1767, and became principal of a school in Elizabethtown, where Alexander Hamilton was one of his pupils. He was successively major and lieutenant-colonel of the 3d New Jersey artillery, and assistant inspector-general under Baron Steuben. He took part in the battles of Trenton, Princeton, Brandywine, and Germantown, and was severely wounded at Monmouth and in Sullivan's Indian expedition, 1779. He was of the greatest service to Washington in securing intelligence of the enemy's movements and in putting down the mutiny of New Jersey and Pennsylvania troops. In 1781 he commanded a battalion of infantry in Lafayette's Virginia campaign, and was present at Yorktown. He was killed by a falling tree at the close of the war.

BARBER, John Warner, American author: b. Windsor, Conn., 1798; d. 1885. He wrote a *History of New Haven* (1831); *Incidents of American History* (1847); *Elements of General History* (1844); and *Our Whole Country* (1861), etc.; and assisted in compiling the historical collections of New York, New Jersey, Virginia, and Ohio.

BARBERINO-DI-MUGELLO, *bâr-bā-rē'nō dē mô-jĕl'lō:* town of Tuscany, on the Siere, 15 m. n. of Florence; with large manufacture of straw-hats. The royal villa of Caffegiolo, the ancient residence of the Medicis, stands in the environs. Pop. 5,000.

BARBERINO-DI-VAL-D'ELSA, *-vâl-dĕl'sâ:* village in Tuscany, with a beautiful situation on the ridge between the valleys of the Pesa and Elsa; celebrated as the place where Pope Urban VIII. was born. One of the palaces of the Barberini is here.

BARBERRY, n. *bâr-bĕr'rĭ* (correctly spelled Berberry) [Sp. *berbĕris;* Ar. *barbâris,* the barberry-tree], (*Berberis*): genus of plants, of the nat. ord. *Berberidacæ* (q.v.). All the species, which are numerous in temperate climates in most parts of the world except Australia, are shrubs with yellow flowers, having a calyx of six leaves, a corolla of six petals, and six stamens, which when touched at the base, show considerable irritability, starting up from their ordinary position of reclining upon the petals, and closing upon the pistil, apparently a provision to secure fecundation. The fruit is a berry with two or three seeds. Not a few of the species are evergreen. They are divided into two sub-genera, sometimes ranked as genera; those with simple leaves forming the sub-genus *Berberis,* and

those with pinnate leaves the sub-genus *Mahonia*, or Ash-leaved B.—The Common B. (*B. vulgaris*) is a native of most of the temperate parts of Europe, Asia, and N. America. It produces its flowers and fruit in pendulous racemes; has obovate, slightly serrate, deciduous leaves; and numerous straight three-forked spines. It is a very ornamental shrub, especially when covered with fruit. Its berries are of an elongate oval form; when ripe, generally of a bright red color, more rarely whitish, yellow, or almost black. They contain free malic acid. The fruit of the ordinary varieties is too acid to be eaten, but makes excellent preserves and jelly. Malic acid (q.v.) is extensively prepared from it in France. A yellow fungus, *Aecidium Berberidis*, is very general upon the under-side of the leaves of the B.; and a notion prevails that it produces rust in grain. This old scouted belief has been remarkably verified by science, the rust existing in one form or stage on the barberry, in another on grain, to which it is communicated. This forbids the employment of the B. as a farm-hedge, for which it is otherwise adapted, hedges made of it being easily kept free from gaps, and becoming more and more impervious by new shoots thrown up from the root. The yellow root of the B. is used for dyeing yellow, and especially the inner bark of it and of the stem and branches. The bark is capable of being employed for tanning leather. In like manner, *B. glauca*, *B. ilicifolia*, *B. tomentosa*, and *B. lutea* are used for dyeing in Chili and Peru; *B. tinctoria* by the inhabitants of the Neilgherry Hills, and *B. aristata* in Nepaul; and a strong similarity of properties appears to pervade the whole genus. *B. Lycium*, a native of the n. of India, is characterized by great astringency, and an extract prepared from it is valuable in ophthalmia. Most of the species are more or less spiny, and some of the evergreen species (as *B. dulcis*) might be very ornamentally employed for hedge-plants. *B. dulcis*, sometimes called the Sweet B., is a native of the s.w. coast of America. Its leaves much resemble those of the common B.; it has solitary flowers on rather long stalks, and globose black berries about the size of a common black currant. The fruit is quite sweet when fully ripe, and makes excellent jelly. When unripe and very acid, it is used for tarts. Pleasant fruits are produced also by *B. aristata*, and *B. Asiatica*, the berries of both of which are dried in Nepaul, after the manner of raisins; *B. concinna*, also a Himalayan species; *B. microphylla*, found in the southern parts of S. America; and *B. trifoliata*, found in Mexico. Those of some of the other species are either disagreeable or insipid, which is particularly the case with most of the ash-leaved barberries, natives of N. America and the n. of India. See BERBERINE.

BAR'BER-SUR'GEON: barber of former times, acting as a kind of surgeon, at least in such smaller operations as blood-letting—in nearly all countries. Till this day, on the pole on which the barber's basin is suspended, there is

represented a twisted or spiral ribbon, which symbolizes the winding of a ribbon round the arm previous to blood-letting. In London, Edinburgh, and elsewhere, the barber-surgeons formed corporations with certain privileges. The surgical duties of these bodies now pertain to the corporations of surgeons. The existence of these professors of the healing art, in England, can be traced as far back as the reign of Edward IV., 1461, when they were first incorporated; and thence till the reign of Henry VIII., when they were united with the surgeons, until the time of George II., when they ceased to be anything but barbers as we now understand the term; the preamble of an act then passed reciting that not till then had the discovery been made that the business or trade of a barber was 'foreign to and independent of, the practice of surgery.' But the act expressly saves all their privileges as a company or corporation, and as such they exist to the present day. See an interesting account of them in Knight's *History of London*, vol. iii. pp. 177–192, which concludes with the following curious extract from the list of officers to Heriot's Hospital in the statutes of that charity compiled in 1627: 'One chirurgeon barber *who shall cut and pole the hair of all the scholars of the hospital;* and *also* look to the *cure* of all those within the hospital who *anyway* shall stand in need of his *art.*'

BARBET, n. *bâr'bĕt* [F.—from *barbe*, a beard]: a species of dog having long coarse hair; a bird of warm climates whose bill is surrounded at the base with bristles; a kind of worm that feeds on the aphides.

BAR'BET (*Bucco*): birds of the families *Capitonidæ* and *Bucconidæ*. They have a large conical beak, surrounded with tufts of bristles directed forwards—a characteristic from which the name B. is derived (Lat. *barba*, a beard). They prey on insects, some of them also on young birds; some are at least partially frugivorous. They inhabit warm parts both of the e. and w. hemispheres, and most of them are birds of gay plumage. Puff-birds, belonging to the last named family, are remarkable for erecting their plumage till they resemble a round ball. Being of short wing, these birds wait for their prey, generally sitting with great patience on some withered branch till it comes near them, when they suddenly dart upon it. They often choose positions close to human habitations, and show little fear.

BARBETTE, n. *bâr-bĕt'* [F. *barbette;* It. *barbetta*, a tuft of hair on the pastern-joint of a horse]: formerly an earthern-terrace inside of a parapet, raised to such a height as to admit of guns being fired over the crest of the parapet, instead of through the embrasures, now a platform, as of metal or concrete (within a parapet), that raises the gun and allows it a wide range. BARBETTE-CARRIAGE, n. a turntable or gun-carriage for elevating and turning a large gun, usually provided with air-

cylinders for receiving the recoil and other operative mechanism. This is now the common method of mounting large guns: See TURRET; GUN. A gun so mounted is said to be *en barbette*. BARBETTE-GUN, n. a large gun for either naval or shore use, when arranged to fire over a parapet instead of through a porthole or embrasure. BARBETTE-SHIP, n. a ship having the larger guns mounted *en barbette*. BARBETTE-TOWER, n. an armored shield for protecting a barbette-gun, often made so as to move by machinery.

BARBICAN, n. *bâr'bĭ-kăn* [AS. *barbacan*; F. and It. *barbacane;* Sp. *barbacana,* a loopholed outlook in a fortified place]: a projecting watch-tower, or other advanced work, before the gate of a castle or fortified town. The term B. was especially applied to the outwork intended to defend the drawbridge, which in modern fortification is called the *tête du pont.*

There are a few perfect barbicans remaining in England, as at Ainwich and Warwick; but the best examples of it, as of the other parts of the fortification of the middle ages, are probably to be seen in the town of Carcassone (q.v.). A very curious and minute account of the siege of Carcassone, 1240, in the form of a report to Queen Blanche by the seneschal who defended it, preserved in the archives of France, has been published in Hewitt's *Ancient Armour,* in which the uses of the B. are fully illustrated. The street called Barbican in London, near Aldersgate street, marks the site of such a work, in front of one of the gates of the old city.

BARBIÉ DU BOCAGE, *bâr-byā-dü-bō-kăzh,* JEAN DENIS, distinguished French geographer: b. Paris, 1760; d. there 1825. He laid the foundation of his fame in 1788 by the publication of his beautiful Atlas to the *Voyage du Jeune Anacharsis,* and was appointed in 1792 keeper of the maps of the Royal Library, and in 1809 professor at the Sorbonne. In 1821 he founded the Geographical Society, of which he became president. He was also a member of the Institute. His maps and plans to the *Voyage Pittoresque en Grèce, de Choiseul Gouffier,* and to the works of Thucydides, Xenephon, etc., exhibit much erudition. He also prepared many modern maps, and published excellent dissertations in various scientific collections. Although the progress of time has necessarily deprived much of his work of its original value, his labors have not the less given a decided stimulus to the progress of science.

BARBIER, *bâr-byā,* ANTOINE ALEXANDRE, French bibliographer: b. Coulommiers, 1765; d. 1825. In 1784 he went to Paris, where he was chosen a member of the committee appointed to collect works of literature and art existing in the monasteries, which were then suppressed. This was the cause of his being appointed in 1798 keeper of the library of the Conseil d'État, collected by himself,

and when it was transported to Fontainebleau in 1807 Napoleon appointed him his librarian. On the return of the king he had the care of his private library. His excellent *Catalogue de la Bibliothèque du Conseil d'État* (1801–3) is now very rare. His *Dictionnaire, des Ouvrages anonymes et pseudonymes* (1806–9, 4 vols. 3d ed. 1824), is, on account of its plan, its accuracy, and its fulness (at least in respect to French literature), one of the best works in this branch of bibliography.

BARBIER, Henri Auguste, French poet: b. Paris, 1805, April 29; d. Nice, 1882, Feb. 12. Having written a historical novel (1830) with Royer, depicting French mediæval society, he entered his proper sphere, that of poetical satire, in which he obtained a brilliant success with *The Iambes* (1831; 31st ed., 1882), a series of poignant satires, political and social, lashing the moral depravity of the higher classes,—notably the ignoble scramble for office under the new government, the subject of *The Quarry*, the most famous among these satires. His next works *Lamentation* (1833), bewailing the misfortunes of Italy, and *Lazarus* (1837), in which he describes the misery of the English and Irish laborer, show a considerable falling off; and in those that followed, the poet of *The Iambes* is scarcely to be recognized. He was elected to the Academy in 1869.

BARBIER, Paul Jules, a prolific French dramatist: b. Paris, 1825, March 8; d. 1901. Having won success with his first effort, *A Poet* (1847), a drama in verse, he produced *The Shades of Molière* (1847); *André Chenier* (1849); *Willy Nilly*, a comedy (1849); and thereafter in collaboration, mostly with Michel Carré, a number of dramas and vaudevilles, also countless librettos for comic operas. After the war of 1870–1 he published *The Sharpshooter, War Songs* (1871), a collection of patriotic poems; and later two other volumes of lyrics, *The Sheaf* (1882) and *Faded Flowers* (1890); besides *Plays in Verse* (2 vols., 1879).

BARBIE'RI, Giovanni (or Gian) Francesco: see Guercino.

BARBIERS: see Beriberi.

BAR'BITON, or Bar'bitos: stringed instrument of the ancient Greeks; made of ivory, in the form of a lyre, with seven strings; said to have been invented by Anacreon.

BARBLES, n. *bâr'blz*, or Barbels, *bâr'belz* [F. *barbes*]: white excrescence which grows under the tongue of some calves, and prevents them from sucking.

BARBOU, *bâr-bô':* name of a celebrated French family of printers, the descendants of John, of Lyon, 16th c. From his press issued the beautiful edition of the works of Clement Marot, 1539. His son, Hugh, removed from Lyon to Limoges, where, among other works, his celebrated edition of *Cicero's Letters to Atticus* appeared, 1580. Joseph Gerard, descendant of the same family—who in the begin-

ning of the 18th c. settled in Paris—continued, 1755, the series of Latin classics in duodecimo—rivals to the Elzevirs of an earlier date—which had been begun 1743 by Coustelier, at the instigation of the learned Lenglet Dufresnoy. This series of classics, prized for its elegance and correctness, was purchased with the rest of the business, by Delalain, from the heirs of Hugh, who d. 1809. There is a complete set of the B. classics in the Royal Library of the British Museum.

BARBOUR, *bâr'bėr*, Erwin Hinckley, American geologist: b. near Oxford, O. He was assistant palæontologist in the United States geological survey in 1882–8; Stone professor of natural history and geology in Iowa College in 1889–91; became professor of geology in the University of Nebraska, and acting State geologist in 1891; and curator of the Nebraska State Museum in 1892. In 1893 he took charge of the annual Morrill geological expeditions, and since then he has also been engaged in the United States geological and hydrographic surveys.

BARBOUR, James, American statesman: b. Orange, county, Va., 1775, June 10; d. 1842, June 8. He was admitted to the bar when 19 years old. He served in the Virginia legislature 1796–1812, becoming governor of the state in the latter year. Three years later he was elected to the United States Senate. He was secretary of war 1825–7, and minister to England 1828–9. In politics he was strongly anti-Democratic. He was chairman of the convention which nominated Harrison and Tyler for the presidency and vice-presidency.

BARBOUR, John: eminent Scottish poet of the 14th c.; b. (as conjectured) abt. 1320; d. prob. March 13, 1395; parentage unknown. He is famous for producing the national epic, *The Bruce.* In his own age he was accounted a man of great learning and worth; he was Archdeacon of Aberdeen from as early as 1357 till his death; in 1357, he travelled into England, accompanied by three scholars, for the purpose of studying at Oxford; and repeated his visit for the same purpose 1364; in 1365, he obtained a passport 'to travel through England with six companions on horseback towards St. Denis and other sacred places;' in 1368, he again received permission to travel through England with two servants and two horses, on his way for scholarly purposes to France; in 1373, he was clerk of audit of the household of King Robert II., and one of the auditors of exchequer, holding the latter office again 1381 and 1385; in 1375, his great poem was more than half finished; in 1377, he had a gratuity of ten pounds from King Robert II.; in 1378, he received from the same prince a perpetual annuity of twenty shillings, which in 1380 he bequeathed to the dean and chapter of Aberdeen, under the condition that they should sing a yearly mass for the rest of his soul; in 1388 King Robert II. granted him a pension of ten pounds a year. Besides *The Bruce*, B.

wrote two other poems, *The Brute*, now lost, in which he recounted the origin and history of the royal house of Stuart, and *The Book of Legends of the Saints*, recently discovered in Cambridge Univ. Library. *The Bruce* is distinguished by great purity and clearness of style, the language and versification comparing advantageously with those of any contemporary English poet, not excepting even Chaucer. His imagery is not rich, but his style is lively, simple and energetic. He has depicted, in rough but faithful outline, the life, manners, and deeds of a truly heroic time, and given to his country the first poem in her literature, and the earliest history of her best and greatest king.—*The Bruce* was first printed in Edinburg in 1571; the best modern edition is that published and edited by Cosmo Innes, for the Spalding Club 1856, the Early English Text Society edited by W. W. Skeat.

BARBOUR, John Humphrey, American educator: b. Torrington, Conn., 1854, May 29; d. 1900, April 29. He was graduated from Trinity College in 1873, and ordained in the Protestant Episcopal Church in 1878. He was rector of Grace Church, Hartford, till 1889, and then became professor of New Testament literature and interpretation at the Berkeley Divinity School.

BARBOUR, Oliver Lorenzo, American lawyer: b. Cambridge, N. Y., 1811, July 12; d. 1889, Dec. 17. He received an academical education, and was admitted to the bar in 1832. During 1847–76 he was reporter of the New York court of chancery and the New York supreme court. He compiled a large number of legal digests, treatises on several branches of practice, and annotated editions of Collyer's, Chitty's, and Cowen's works.

BARBOUR, Philip Pendleton, American jurist: b. Orange county, Va., 1783, May 25; d. 1841, Feb. 24. He studied law at William and Mary College and began to practise in 1802. He led the war party in the Virginia legislature 1812–14, when he was elected to Congress, becoming speaker of the House in 1821. Four years later he was appointed a judge in his native state, returning to Congress in 1827; but later resigning through ill-health. He was subsequently appointed a Federal judge, and in 1836, was promoted to the supreme court of the United States. In politics he was a Democrat.

BARBOUR, William McLeod, American Congregational clergyman: b. Fochabers, Scotland, 1827, May 29; d. Malden, Mass., 1899, Dec. 5. He was graduated from Oberlin College in 1859, and from Andover Theological Seminary in 1861; was pastor in South Danvers (now Peabody), Mass., 1861–8; professor in Bangor Theological Seminary 1868–77; professor of divinity and college pastor in Yale 1877–87; and became principal and professor of theology in the Congregational Church in Montreal, Canada, in 1887–96.

BARBUDA, *bâr-bô'da:* one of the British Caribbees, 30

miles to the n. of Antigua. Of its n. end, the lat. and long. are 17° 33′ n., and 61° 43′ w. Area, estimated 75 sq. m. The island, small as it is, has never been cleared for cultivation, the greater part of the interior being a dense forest interspersed with patches of savanna. The agriculture is confined to the rearing of stock and the growing of provisions. B. is of coral formation, and beset with reefs. It has a roadstead, but no harbor. Pop. 1,000.

BARBUS, n. *bâr′bŭs* [L. *barbus*, a barbel]: genus of fishes of the teleost order *Teleocephali*, and the family *Cyprinidæ*. One species occurs in Britain.

BARBY, *bâr′bē:* walled town of Prussian Saxony, on the left bank of the Elbe; 15 m. s.e. of Magdeburg. It is well built, and has an old castle. Pop.—chiefly engaged in the manufacture of woolens and linens—(1900) 5,137.

BARCA, *bâr′ka:* country in n. Africa; lat. 26°–33° n., long. 20°–25° e.; between the Great Syrtis (now called the Gulf of Sidra) and Egypt. It forms the eastern division of Tripoli, having the rest of that dominion on the w., the Mediterranean Sea on the n., the Libyan Desert on the s., and it is separated from Egypt on the e. by no definite line, but by a number of roving independent tribes. It corresponds nearly with the ancient Cyrenaica (q.v.). The climate is healthful and agreeable in the more elevated parts, which reach a height of about 1,200 ft., and in those exposed to the sea-breeze. There are none but small streams, but the narrow terrace-like tracts of country are extremely fertile, realizing all that is said of the ancient Cyrenaica. Rice, dates, olives, saffron, etc., are produced in plenty. The pastures are excellent; the horses still celebrated as in ancient times. But the good soil extends over only about a fourth of B.: the east exhibits only naked rocks and loose sand. Many ruins in the n.w. parts attest a former cultivation much superior to the present. So early as the time of Cyrus, B. became a state, which proved dangerous to the neighboring state of Cyrene; but within a single century it sank, and became subject to Egypt. In the Roman period, its inhabitants were noted for their predatory incursions. It was afterwards a province of the Greek empire, and had declared itself independent when the Arabs invaded and conquered it, 641. The present inhabitants consist of Arabs and Berbers. B. was formerly a dependency of Tripoli, but since 1879 has been an independent vilayet of the Turkish empire. Pop. in 1900 est. 302,000.

BARCAROLLE, n. *bâr′kă-rōl* [F. *barcarolle*—from It. *barcarole;* It. *barca*, a barge]: a species of song peculiar to the gondoliers of Venice. The name is applied to musical compositions for voice or pianoforte of a similar character.

BARCELLONA, *bâr-chĕl-lō′nâ*, AND POZZO DI GOTTO, *pŏt′so dē go′to:* two towns of Sicily, province of Messina; 22 m. w.s.w. of Messina; close together, really forming one town, the two parts separated by a small stream,

the Fiume di Castro Reale, supposed the Longanus of antiquity. The chief street is a long street of mean houses of a single story. B. is in a broad plain, between the mountains and the sea, abounding in corn, wine, oil, and fruit. Pop. of the two towns, 14,471.

BARCELONA, *bâr-sė-lō'nâ:* the most important manufacturing city in Spain, in the province of B.; beautifully situated on the Mediterranean between the mouths of the Llobregat and the Besos, in a district as luxuriant as a garden. It is walled, and has a citadel, which, however, is effectually commanded by the fortress of Montjuich on the s.w. The city is divided into two parts—the old town and the new—by the *Rambla* (river-bed), which has been planted with flowering shrubs, and formed into a beautiful promenade. The streets of the old town, forming the n.w. division, are crooked, narrow, and ill paved. Those of the new are much more spacious and regular. There is a large suburb e. of the town, where the seafaring portion of the population chiefly reside. B. is the see of a bishop. It has a university, and colleges and schools for general and special educational purposes; public libraries, in one of which is a splendid collection of MSS.; several hospitals and other charitable institutions; the finest theatre in Spain; and numerous ancient and elegant churches, with a cathedral which, begun in 1298, is not yet completed. B. manufactures silk, woolens, cottons, lace, hats, firearms, etc., which with wine, fruit and oil, form its principal exports. It imports raw cotton, coffee, cocoa, sugar, and other colonial produce; also Baltic timber, salt-fish, hides, iron, wax, etc. Next to Cadiz, it is the most important port in Spain. The harbor is spacious, and the entrance is protected by a large mole. B. is a place of great antiquity, and associated with many historical events. Local tradition fixes the date of its foundation 400 years before the Romans; and it is said to have been refounded by Amilcar Barca, the father of Hannibal, from whom its ancient name, Barcino, was derived. An important city under the Romans, Goths, and Moors, B. in 878 became an independent sovereignty, under a Christian chief of its own, whose descendants continued to govern it, and to hold the title of Counts of Barcelona until the 12th c. when its ruler adopted the title of King of Aragon, to which kingdom it was annexed. During the middle ages, B. became a flourishing seaport, rivalled in the Mediterranean by Genoa only. To its commercial code, framed in the 13th c., much deference was paid by the whole of Europe. Columbus was received here, 1493, by Ferdinand and Isabella, after his discovery of America. In 1640, it appealed to France against the tyranny of Philip IV.; but it turned against that country in the war of the Spanish Succession, and adhered to Austria. In 1705, the fortress of Montjuich was surprised and captured by Lord Peterborough, and the city surrendered shortly afterwards. In 1714, after a most heroic defense,

it was stormed by the Duke of Berwick, and given over to fire and sword. Napoleon perfidiously obtained possession of it in 1808; and with one or two reverses, and in the face of great difficulties, it was held by the French until the treaty of peace concluded in Paris 1814. For thirteen years, B. remained quiet under the iron rule of España; but in 1827 its old turbulent spirit returned, and it rose in favor of Don Carlos. Since that time, B. has generally supported the government, although it has many times shown itself to be the centre of anarchistic movements in Spain. Pop. (1864) 190,000; (1868) reduced by cholera, 167,095; now about 533,000.

BARCLAY, *bâr'klĭ*, ALEXANDER: a poet and prose writer, born in England or Scotland about the end of the 15th c.: d. 1552, June. He studied at Oxford, and obtained appointment as one of the priests or prebendaries of St. Mary Ottery, Devonshire. He afterward became a monk of the Benedictine monastery of Ely, where he continued until its suppression, 1539. He died six weeks after he had been presented to the rectory of All-Hallows, London. His claim to notice rests chiefly upon his famous poem, *The Shyp of Folys of the Worlde*—partly a translation, and partly an imitation of the German *Narrenschiff* by Brandt —printed by Pynson 1509, and since often reprinted (best edition by T. H. Jamieson, 1874). He published several other works, among them *The Myrrour of Good Manners*, *The Castell of Labour*, *The Egloges*, etc.

BARCLAY, JAMES, Canadian educator: b. Paisley, Scotland, 1844, June 19. He was licensed by the Paisley Presbytery in 1870; and was called to St. Paul's Church, in Montreal, in 1883. While in Scotland he was frequently summoned to Balmoral to preach before Queen Victoria. He served through the Riel rebellion in the Northwest Territories, in 1885, and has been president of Trafalgar Institute since its opening.

BARCLAY, JOHN: a clever poet and satirist, abt. 1582–1621, Aug. 12; b. Pont-à-Mousson, Lorraine, where his father William, a Scotsman (d. 1605), had held the office of prof. of law. He studied in the Jesuit College of that place; and his distinguished talents caused the Jesuits to try to induce him to enter their order. His rejection of their proposals brought much persecution on him and his father. He accompanied his father to England 1603, where he soon attracted the attention of James I., to whom he dedicated one of his works, *Euphormionis Satyricon* (Lond. 1605), a politico-satirical romance, chiefly against the Jesuits. Next appeared his *Conspiratio Anglicana* (Lond. 1605), and his *Icon Animarum* (Lond. 1614). In 1615, he left England, and went to Rome, where he died. In the same year his celebrated work *Argenis* appeared in Paris (Paris, 1621).

BARCLAY, JOHN, M.D.: 1758, Dec. 10—1826, Aug. 21; b. Cairn, near Drummaquhance, Perthshire, Scotland; educated at the parish school of Muthil, and the Univ. of

St. Andrews. He studied for the ministry of the Church of Scotland, and was licensed as a preacher; but turned to the profession of medicine, and particularly to the study of anatomy; and, 1797, became a private lecturer on human and comparative anatomy in Edinburgh. He pub., 1803, *A New Anatomical Nomenclature;* 1808, a treatise on the *Muscular Motions of the Human Body;* 1812, *Description of the Arteries of the Human Body,* a work of vast labor and accurate observation. He died at Edinburgh, leaving to the Royal College of Surgeons in Edinburgh, his admirable anatomical collection.

BARCLAY, Robert: celebrated apologist of the Quakers: 1648, Dec. 23—1690, Oct. 3; b. Gordonstown, Morayshire, Scotland; grandson of David B. of Mathers, of an old Scoto-Norman family, which traced itself through fifteen generations to Walter de Berkeley, who acquired a settlement in Scotland about the middle of the 12th c. Robert's mother was the daughter of Sir Robert Gordon, the premier baronet of Nova Scotia, historian of the House of Sutherland. Robert received the rudiments of learning in his native country, and was sent to the Scotch College at Paris, of which his uncle was rector, where his rapid progress in his studies, excited the admiration of his preceptors, as well as of his uncle, who offered to make him his heir, if he would remain in France, and formally adopt the Rom. Cath. faith, to whose ceremonies he had been habituated there. B. refused, and in compliance with the wish his mother had expressed on her death-bed, he returned home, 1664. Though only sixteen, B. was an excellent scholar, and could speak in Latin with wonderful fluency and correctness. In 1667, he embraced the principles of the Society of Friends, for reasons more highly respected in our day than in his. He states in his *Treatise on Universal Love,* that his 'first education fell among the strictest sort of Calvinists,' those of his country 'surpassing in the heat of zeal not only Geneva, from whence they derive their pedigree, but all the other so-called reformed churches;' that shortly afterwards, his transition to France had thrown him among the opposite 'sect of papists,' whom, after a time, he found to be no less deficient in charity than the other; and that, consequently, he had refrained from joining any, though he had listened to several. The ultimate effect of this was to liberalize his mind, by convincing him of the folly and wickedness of sectarian strife. In both Calvinists and Catholics, he found an absence of 'the principles of love,' 'a straitness of doctrine,' and a 'practice of persecution,' which offended his idea of Christianity, as well as his gentle and generous nature. He therefore allied himself gladly to this new sect, whose distinguishing feature was its charity and pure simplicity of Christian life, and soon became one of its most devoted adherents and its ablest advocate. In the course of his life, he made several excursions into England, Holland, and Germany, earnestly propagating his peaceful views w erever he went, and occasionally in the companionship of William Penn. His first publication was *Truth Cleared of Calumnies,* 1670;

intended as a refutation of the charges—many of them notoriously false—made against the new sect. In 1673, appeared *A Catechism and Confession of Faith*, the answers to the questions being—to avoid theological dogmatism—in the words of Scripture. This was followed by *The Anarchy of the Ranters*, etc. In 1675, he published his *magnum opus*, elaborately entitled *An Apology for the True Christian Divinity, as the same is held forth and Preached by the People called in scorn Quakers: Being a full Explanation*, etc. It contains a statement and defense of fifteen religious propositions peculiar to the Friends. The leading doctrine of the book is, that divine truth is made known to us not by logical investigation, but by intuition or immediate revelation; and that the faculty, if it can be technically defined, by which such intuition is rendered possible, is the 'internal light,' the source of which is God, or, more properly, Christ, God manifest, 'who is the light that lighteth every man that cometh into the world.' The identity of this doctrine with that held by F. D. Maurice and others of the 'Broad Church' in the present day has been more than once remarked. In 1677, appeared his *Treatise on Universal Love*. It was the first of that long series of noble and gentle remonstrances against the criminality of war that has so honorably distinguished the Society of Friends. It was addressed to the ambassadors of the several princes of Europe, met at Nimeguen. In 1686, he published his last work, a defense of the doctrine of 'immediate revelation.' He died at Ury, Kincardineshire. His estate remained in the possession of his descendants until 1854, its owner at that time being Captain Barclay, the famous pedestrian. 'The Apologist's Study,' which remained much as he left it, was long an object of pilgrimage with members of the Society of Friends: it was destroyed a few years ago, when the old house of Ury was pulled down.

BARCLAYA, n. *bâr'klā-a* [after *Robert Barclay*]: genus of aquatic plants belonging to order *Nymphæaceæ* and tribe *Barclayidæ;* found in E. Indies.

BARCLAY DE TOLLY, *bâr-klā' dĕh to-le'*, MICHAEL, PRINCE: 1759–1818; b. in Livonia, where his father, Gottlieb B. de T.—at one time a member of the town-council of Riga—possessed an estate. Prince Michael, one of the most distinguished Russian generals, was descended from a branch of the same Scotch family to which Barclay the poet and Barclay the apologist of the Quakers, belonged, some of whom had settled in Mecklenburg and Livonia. Having been adopted by General van Vermoulen, B. de T. entered a Russian regiment of cuirassiers, at first as sergeant. He fought with great bravery in the Turkish war of 1788–89; in the campaign against Sweden, 1790: and in those against Poland 1792 and 1794. In 1806, at Pultusk, as maj.gen., he commanded Benningsen's advanced-guard. He lost an arm at the battle of Eylau. Although much hated by the Russian national party, because regarded by them as a German, he was appointed minister of war by the

Emperor Alexander 1810—an office which he held till 1813. In 1812, he was made commander-in-chief of the army of the west. His retreat to Smolensko, and the loss of the battle fought there Aug. 17, raised the hatred of the Russion national party to a greater height, and he was compelled to yield the chief command to Kutusow. It has been maintained by many, that B. de T. was the originator of the Russian system of defense in 1812. He had indeed advised a retreat to the interior, and recommended the avoidance of a battle; but the system of defense, as a whole, originated with General Pfuel, who had left the Prussian service, and constantly accompanied the Emperor Alexander from the year 1807, without holding any distinct official appointment. At Moskwa, B. de T. commanded the right wing. After the death of Kutusow, he again obtained the chief command of the army, which he held at the battle of Bautzen, and retained till the truce. He afterwards commanded the Russian army in Bohemia, and took part in the battles of Dresden, Culm, and Leipsic. He was commander-in-chief of the Russian army in France, and in consequence of this was made a prince and a field-marshal. He died at Insterburg, on his way to the Bohemian baths. Two or three years before his death, the estate of Tolly or Towie, in Aberdeenshire, the old inheritance of his family, was for sale, and he was pressed to buy it, but refused, on the ground that his family had been so long expatriated that Scotland was now to them a strange country.

BAR-COCHBA, *bar-kok'bâ*, SIMON: the leader of the Jews in their great insurrection against the Romans, under the Emperor Hadrian A.D. 131–135. Three times had the oppressed Jews revolted without success, from 115 to 118; and in 130, soon after Hadrian's return from Syria, a new rebellion broke out, for which they had been secretly preparing. At the head of it was one Simon, who assumed the name of Bar-cochba, i.e., 'Son of the Star,' pretending that the prophecy was to be fulfilled in him, 'There shall come a Star out of Jacob' (Numb. xxiv. 17). He fought at first with great success against the Romans, and even compelled them to evacuate Jerusalem, where he was proclaimed king, and caused coins to be struck with his name. The war spread over all Palestine, and 50 towns, besides many villages and hamlets, came into the possession of the Jews. But on the arrival of Hadrian's general, Julius Severus, Jerusalem was retaken; and in 135, Aug., Bether, the very last fortress held by the Jews, was stormed by the Romans. B. fell on the day of this bloody conquest. During the war, hundreds of thousands of Jews were destroyed, and very cruel edicts were subsequently issued against them. From this last struggle dates the final dispersion of the Jews over the face of the earth. The Holy City was razed to the ground, and rebuilt under another name. The Jews still retain in their liturgy hymns which they chant in mournful memory of this tragic event.

BARD, n. *bârd* [F. *barde;* It. *bardo;* L. *bardus,* a bard

—from W. *bardd;* Gael. and W. *bard,* a poet]: one who sang his own poems among the ancient Celts; a poet. BARDIC, a. *bâr'dĭk,* pertaining to bards or minstrelsy. BARDISM, n. *bâr'dĭzm,* the learning and the maxims of bards.—*Bard* was the name known to the Romans since 200 B.C., by which the Gauls and other Celtic peoples (British, Welsh, Irish, and Scotch) designated their minstrels. Like the Scôps of the Anglo-Saxons, and the Skalds of Scandinavia, the bards celebrated the deeds of gods and heroes at religious solemnities and the festivities of princes and nobles, accompanying their recitations with the harp or chrotta (Ir. *cruit* and *clarseach*); they excited the armies to bravery, preceded them into the fight, and formed the heralds of princes, and the mediators of peace. The institution early disappeared among the Gauls, but lingered long in Wales, Ireland, and Scotland. The bards formed a hereditary order, and exercised a decided influence. The minstrels among the Celts, as among the Germans, were the organ of the people, and the channel of all historical tradition. It is supposed that in Wales, about A.D. 940, their privileges were defined and fixed by the laws which bear the name of King Howel Dha; and in 1078 the whole order is said to have been reformed and regulated anew by Gryffith ap Conan. At Caerwys, Aberfraw, and Mathraval, there were held from time to time great competitions in minstrelsy, called Eisteddfods, at which the judges were appointed by the prince. When Wales was conquered by Edward I. (1284), the bards lost their privileges, and were, according to tradition, persecuted and put to death; but succeeding princes countenanced the institution, and Eisteddfods were repeatedly held under royal commission down to the reign of Elizabeth. Since then, exertions for the revival of national Welsh poetry and the bardic profession have been made by several societies: the Gwyneddigion, founded 1770; the Cambrian, 1818; and more recently, the Metropolitan Cambrian Institution. To these societies, and to the patriotism of individuals, are due collections of the relics of the lays of the Welsh bards, none of which, it should be added, can be traced to MSS. of an older date than the 12th c. The most interesting of those relics are those of Liwarc'h-Henn, Aneurin and Taliesin.

In Ireland, the bards are believed to have been a hereditary guild, divided into three classes: the Filedha, who sang in the service of religion, and in war, and were the counselors and heralds of princes; the Braitheamhain, who recited or chanted the laws; the Seanachaidhe, who were chroniclers and genealogists to princes and nobles. Their ample privileges and endowments of land gave them an exorbitant influence, which both princes and people had sometimes to rise against and curb. The great skill of the Irish bards on the harp was acknowledged everywhere. After the conquest of Ireland by Henry II., the profession began to sink. Still many of the chiefs maintained bards

in their families, whose songs and legends kept up the national feeling. This occasioned several measures of the English rulers against the Irish bards; Elizabeth ordered the bards that were captured to be hanged, as the instigators of rebellion. Turlogh O'Carolan (1670–1737) is reckoned the last Irish bard; his poems were translated into English by Furlory.

The bardism of Scotland may be conjectured to have been similar to that of Ireland; but nothing is certainly known of the subject beyond the fact, that there were poets or bards, of different degrees, in the Highlands down to the 17th century.

The name of B. was unknown among the Germanic nations; though a corrupt reading in some MSS. of the *Germania* of Tacitus (*barditus* for *baritus*, the 'war-cry') led Klopstock and others to write wild religious and war songs, which they called 'Bardits,' under the notion that they were restoring a branch of the national literature. This Ossianic aberration soon came to an end.

BARD, v. [see Bards]: to caparison; to adorn with trappings.

BARD: fortress and village of Piedmont, on the left bank of the Doire, about 23 m. s. s.e. of Aosta. When the French crossed the St. Bernard, 1800, the fortress of B. offered a resistance to their further advance into Italy, which might have been effectual had the Austrian garrison been sufficiently alert. The French failed to take the fortress by storm, but they succeeded in dragging their artillery under and past the guns of the fort during the night, and were far on the road to Ivrea before the Austrian commander was aware that they had passed. B. was taken a short time after by the French, and razed, but it has since been restored. Pop. about 440.

BARD, John, American physician: b. near Philadelphia, 1716, February; d. 1799, March 30. He was of a family which had fled from France upon the revocation of the edict of Nantes. He practised his profession a few years in Philadelphia, but removed to New York in 1746, where he rose to the first rank among physicians. In 1759, the citizens of New York were alarmed by the arrival of a ship, on board which a malignant fever was raging, and Dr. Bard was appointed to take measures to prevent the disease from spreading. He succeeded in keeping the pestilence within the limits of a temporary hospital, but to guard against similar dangers in future, at his suggestion, Bedloe's Island was purchased, and hospital buildings erected thereon, which were placed under his charge. He continued the practice of his profession to an advanced age, and upon the establishment of the New York Medical Society in 1788, was elected its first president.

BARD, Samuel, American physician: b. Philadelphia, 1742, April 1; d. 1821, May 24. He practised in Phila-

delphia and New York; organized the medical school of Kings (Columbia) College, and was dean of the faculty; also was president of the New York College of Physicians and Surgeons that succeeded the medical school. He published several works, including *The Shepherd's Guide* (1807); and a *Manual of Midwifery* (1807).

BARD, Thomas Robert, American politician: b. Chambersburg, Pa., 1841, Dec. 8. He engaged in railroading in Maryland 1858–64, when he went to California to look after the interests of Col. Thomas A. Scott. Since then he has resided in Ventura county, engaging in wharving and warehousing, banking, sheep grazing, real estate, and petroleum mining. In 1892 he was the only Republican elector for California. He was elected to the United States senate 1900, Feb. 7, by the unanimous vote of the Republican majority in the legislature.

BARDESANES, *bâr-de-sā'nēz* (properly Bar-Deisan): founder of a Gnostic sect; lived in the latter part of 2d c.; b. Edessa, in Mesopotamia. He stood high in favor with the monarch Abgar-bar Maanu, but little is known regarding him. It is stated that he held a disputation with the philosopher Apollonius, who appeared in Edessa 165, in the suite of L. Antonius Verus. B. was first a disciple of Valentinus, whose heresy he afterwards abjured, and wrote against it, and also against other heresies; but ultimately he relapsed into partial agreement with his old master. His *Gnosis* was not purely dualistic. He did not consider evil the eternal coefficient of good, but merely the result of a temporary reaction of matter on spirit. Yet, inexplicably enough, he maintained the devil to be a self-existent, independent being. He denied the doctrine of the resurrection of the body, and in conformity with such a conviction, asserted that Christ's body was not real, but only an illusive image brought down from heaven. He diffused his opinions through the medium of hymns, of which he is reckoned the first writer in Syria. These hymns, fragments of which are still extant, show a rich and pure fancy. His followers were called *Bardesanists*. See Hahn's *B.* (1819); Hilgenfeld's *B., der letzte Gnostiker* (1864). He died in 223.

BARDI, *bâr'dē:* small town of Italy, on the left bank of the Ceno, in the province of Piacenza; 31 m. w.s.w. from Parma.

BARDINESS, a. *bârd'ĭ-nĕs* [Scotch, *bardie; -ness*]: petulant frowardness, pertness, and irascibility, as manifested in conversation.

BARDOLINO, *bâr-do-lē'no:* town of northern Italy; with a harbor on Lake Garda; about 14 m. w. from the fortress of Verona. The battle of Rivoli was fought in its vicinity 1797, Jan.

BARDS, n. plu. *bârdz* [F. *bardes*, trappings for horses, thin slices of bacon for larding woodcocks, etc.: Sp. *barda*]: thin broad slices of bacon with which capons, pullets, etc., are dressed and baked for table.

BARDSLEY, *bârdz'lĭ*, CHARLES WAREING, English clergyman and author: b. Keighley, Yorkshire, 1834. He was graduated at Oxford in 1868, and ordained deacon in 1870. His publications include *English Surnames, their Sources and Significations* (1875); *John Leeley's Troubles* (1876); *Memorials of St. Anne's, Manchester* (1876); *Curiosities of Puritan Nomenclature* (1880); *Her Grandfather's Bible, a Tale of Furner's Fells* (1886); etc.

BARDWAN, *bŭrd-wân'*, a division of Bengal, upon the Hugli. Area, 13,850 square miles; pop. (1901) 7,393,854. Apart from its products, rice, grain, hemp, cotton, indigo, etc., it has a noted coal field of about 500 square miles in area, with an annual output of about 500,000 tons. The capital of the same name has a population of 34,080.

BARE, a. *bär* [AS. *bær;* Ger. *baar;* Icel. *ber*, bare]: naked; without covering; plain; simple; poor: V. to make naked; to strip or uncover. BA'RING, imp. BARED, pp. *bärd:* ADJ. naked; exposed; uncovered. BARELY, ad. *bär'lĭ*, indigently; slenderly; with difficulty. BARE'NESS, n. the state or quality of being bare; nakedness. BAREFACED, a. *bär-fāst'*, shameless; impudent. BAREFACEDLY, ad. *-fās'ĕd-lĭ*. BAREFAC'EDNESS, n. effrontery; assurance; impudence. BARE'-BONE, a., or BARE-BONED', a. *-bōnd'*, so lean that the bones show themselves. BARE POLES, applied to a ship with no sails set; either scudding before the wind, or lying to from stress of weather.—SYN. of 'bare, a.': naked; scanty; mere; uncovered; meagre; destitute.

BAREBONE'S PARLIAMENT: the 'Little Parliament' summoned by Oliver Cromwell, which met 1653, July 4, so called from Praise-God Barebone, or Barbone, a leather merchant, and one of its members. It consisted of about 140 men of good position and of well-approved life and religion, but most of them holding destructive social theories. They proceeded to abolish the Court of Chancery and were proceeding to abolish tithes, to the alarm of Cromwell himself and the more moderate men, when the parliament dissolved itself, Dec. 12 of the same year.

BARE'FOOTED [Lat. *discalceati*, i. e., shoeless]: appellation given to certain monks and nuns who abstain from wearing any covering on the feet, either entirely (as the Alcantarines, who originated at Placentia Spain, 1540, but who are found at present chiefly in the kingdom of Naples), or for a specified period of the year (as the nuns of our Lady of Calvary); or who, instead of shoes, wear merely sandals, i.e., soles of wood, leather, rope, or straw fastened by thongs. They do not constitute a separate order in the Rom. Cath. Church, but are found as a higher grade of asceticism with more or less severity of observance, among most of the orders, Carmelites, Franciscans, Augustines, Eremites, Capuchins, etc. They are steadily ignored by the more dignified Dominicans, though the latter are themselves mendicant friars. The origin of this form of religious austerity is to be traced generally to the custom which

prevailed among the Jews and Romans of putting off their shoes on the occurrence of public calamities, that in this condition of mourning and humiliation they might implore the divine Being for deliverance; but perhaps more particularly to the command which Christ gave his disciples (Matt. x. 10; Luke x. 4).

BARÈGE, n. *bă-raizh':* thin mixed tissue adapted for women's dresses, called in France *Crêpe de Barèges;* named from the town in the Pyrennes, though barèges were never made in that little watering place, the seat of the manufacture being at Bagnères de Bigorre. B. are usually a mixture of silk and worsted; an inferior kind being composed of cotton and worsted. They vary in color and are sometimes light in tint, with printed patterns. All are of a slight fabric for summer wear. The best are still manufactured in France.

BARÈGES, *bar-raizh':* small watering place in France, in the Pyrenees, about 18 m. from Bagnères de Bigorre. The mineral water for which it is celebrated contains principally sulphide of sodium, with portions of carbonate, muriate, and sulphate of soda, nitrogen, and sulphuretted hydrogen. Its efficacy in the cure of wounds, rheumatism, stiffness of joints, and scrofulous complaints is said to be remarkable.

BAREGINE, n. *bă-rāzh'ēn:* a peculiar organic substance derived from algæ, found in some hot springs of Barèges in the Pyrenees. Many algæ are found growing in mineral springs, especially those of a sulphuric nature. The product of their growth is a mucous-like substance somewhat resembling the white or glair of an egg. This deposit, abundant in the hot springs of Barèges, imparts a flesh-broth flavor and odor to the water, which is prized, and is sometimes imitated by adding animal gelatine to the sulphur-baths where B. is deficient.

BAREILLY, *bâ-rā'lē:* chief city of a dist. in Rohilcund, N. W. Provinces of India. (*Rai Bareilly* is a different town, district, and division in Oude, near Lucknow.) The city B. is 152 m. e. of Delhi; pleasantly situated in a well-wooded country on the left bank of the Jooa, an affluent of the western Ramgunga. Besides a brisk and lucrative commerce, it has considerable manufactures, particularly of ornamental furniture, sword-cutlery, etc. It is the seat of a college. B. became a name of notoriety in the great mutiny of 1857. On May 31, the city was a scene of rapine and bloodshed. The native garrison without any European troops to overawe them, rose against their officers, and seized the public treasure. They murdered every European who had not the means of escaping. But fortunately, from a suspicion of the outbreak, the ladies and children of the company's servants, both civil and military, had previously been sent off in safety. B. was recovered by Sir Colin Campbell, afterwards Lord Clyde, 1858, May. Pop. (1901) 131,208.

The dist. BAREILLY is bounded e. by Oude and Nepaul; 1,595 sq. m.; pop. over 1,200,000.

BARÈRE DE VIEUZAC, *bâ-rair' dĕh ve-ĕh-zâk'*, BERTRAND: 1755, Sept. 10—1841, Jan. 14; b. Tarbes, France. He became an advocate in the court at Toulouse. After acting as a deputy in the national assembly, the department of the Hautes-Pyrénées, elected him to the national convention 1792. He is said to have been naturally in favor of moderate measures, but he was easily overawed by the influence of the party of the Mountain, with whom he generally acted, and whom he supported by his eloquence, which was so flowery and poetical in style that he came to be designated the Anacreon of the guillotine. He was president of the convention when the sentence was passed upon Louis XVI. He rejected the appeal to the people, and gave his vote with these words: 'The law is for death, and I am here only as the organ of the law.' His natural mildness warring with the instinct of self-preservation, made him alternately a supporter of merciful measures and an advocate of the guillotine and his whole public conduct betokens selfishness rather than patriotism or humanity. After the death of Robespierre, in which he had concurred, B. nevertheless proposed the continuation of the Revolutionary Tribunal, for which he was denounced by Lecointre, and afterwards impeached and sentenced to transportation; his sentence, however, was not carried into effect, and he partook of the general amnesty of the 18th Brumaire. He was elected deputy to the chamber, 1815, during the Hundred Days. After the second restoration, he was banished from France, and went to Brussels, where he was busied in literary work, till the revolution of July permitted his return. In 1832, he was once more elected a deputy by the department of the Hautes-Pyrenees; his election, however, was annulled, on account of errors of form, whereupon the government called him to be a member of the administration of that department, which office he held until 1840. He bestowed upon the younger Carnot his *Mémoires*, which have been published (2 vols., Par. 1842). His many other political and historical writings are now of no importance.

BARETTI, *bâ-rĕt'ē*, JOSEPH: 1719–89; b. Turin; d. London: Italian writer. He was intended for the law, but turned to literature. In 1751, he established himself as a teacher of Italian in London, where, 1757, he published the *Italian Library*, giving an account of the most eminent Italian authors and their works. He was about this time appointed secretary for the foreign correspondence of the Royal Academy. In 1762, he published an account of his travels through Portugal, Spain, and the south of France to Italy, in *Lettere Famigliari*, which, with additions and a new title, were republished in England. B. then went to Italy, and published at Venice a journal called the *Literary Scourge*, which brought upon him many prosecutions. On his return to England he published, among

other works, an Italian grammar, and an Italian and English dictionary, which have since gone through many editions. One evening he became involved in a street brawl in London, and stabbed with his penknife a man, who died soon after. B. was tried for murder, made his own defense, and was acquitted—Dr. Johnson, Burke, and Garrick testifying to the excellence of his character.

BARFLEUR, *bar'flėr':* seaport town of France, dept. of La Manche; about 15 m. e. of Cherbourg; now a place of little importance, but noteworthy as being the port whence, according to report, William the Conqueror set out on his invasion of England. In the 13th and 14th c., B. was twice pillaged by the English.

BARGA, *bâr'gâ:* town of Italy, province of Lucca, 25 m. n.n.e. from Pisa.

BARGAIN, n. *bâr'gĕn* [F. *barguigner,* to haggle: It. *baratta,* strife; *baratto,* exchange—from the syllables *bar, bar* (see BARBARIAN)]: *originally,* the noise or chaffer employed between individuals in buying and selling; an agreement; a cheapened commodity: V. to make a contract or agreement; to sell on speculation. BARGAINING, imp. *băr'gĕn-ĭng.* BARGAINED, pp. *băr'gĕnd.* BARGAINEE, n. *băr'gĕn-ē',* he who accepts a bargain. INTO THE BARGAIN, something allowed in addition to what is strictly due; besides; to boot.—SYN. of 'bargain, n.': agreement; contract; covenant; compact.

BAR'GAIN AND SALE, in Law: a mode of conveyance whereby property, real and personal, may be assigned or transferred for valuable consideration. It finds a chief place in law-books in connection with the conveyance of *real* estate. In regard to personal estate, *assignment* (q.v.) appears the more appropriate, as it is the more usual term. B. and S., then, may be described as a conveyance, in the way of a real contract, by means of which property in lands and tenements, whether that property be in possession, remainder, or reversion, is conveyed from one person to another. In its terms it consists of a B. and S. by the seller to the intended vendee for money. See LEASE and RELEASE.

No particular form of words is essential to the validity of a B. and S.; 'bargain and sell' are the words of transfer ordinarily used. But other words will have the same effect, and the distinctive character of the conveyance is determined by the consideration on which it is founded. This consideration, however, is held to be a mere matter of form, and sufficiently complied with if the conveyance purport to be so founded. To this end, any trivial sum may be inserted in the conveyance, though the consideration which really passes between the parties be of larger amount; or even though it be, in fact, not of a pecuniary nature. It is also immaterial whether the sum so inserted be actually paid or not. See CUSTOS ROTULORUM: POSSESSION OF PROPERTY: REMAINDER: REVERSION: INDENTURE.

BAR'GA PASS: in the Himalaya; n. lat. 31° 16′, e. long. 78° 19′; the highest part of it about 15,000 ft. above the sea.

BARGE, n. *bârj* [mid. L. *barga*, a boat: O.Fr. *barge*, a boat: prob. a variant of *barque*]: sailing vessel of any kind (*Chaucer, obs.*). In modern usage, B. is a two-decked boat for carrying freight or passengers, having itself no sails or other mode of propulsion, but designed to be towed by a steamer or tug-boat (*U. S. usage*): a flat-bottomed boat for conveyance of goods between vessels in a harbor and the shore, or for canal and river traffic. B. in former times, was a vessel of state, often highly decorated with banners and draperies, sumptuously furnished, propelled by a strong corps of rowers, and used for conveyance of sovereigns and other princes, high magistrates, embassadors, etc., and to grace pageants. In the United States, the name is given to a boat used by racing crews when training or practicing—commonly a long, narrow, lap-streak boat, wider and stronger than a racing shell. In New England, especially in some parts near the coast, the term is applied to a large wagon for conveyance of passengers from a railroad station or a steamboat landing to hotels—an omnibus.

BARGE, *bâr'jā:* town of the compartimento Piedmont, province of Cuneo, Italy, 30 m. s.w. of Turin, at the foot of Mt. Mombracco. When Carlo Alberto, after the battle of Novara, 1849, Mar. 13, abdicated the throne of Sardinia, he assumed the title 'Count of Barge.'—Pop. about 2,000.

BARGE, *bâr'jā:* ancient town of Piedmont, province of Cuneo, 30 m. s.w. of Turin. There are manufactories of fire-arms, and slate-quarries, and a brisk general trade. Pop. abt. 2,000.

BARGE-COUPLES, *bârj-* [*barge*, a supposed corruption of *verge:* Ger. *bergen*, to protect]: in *arch.*, pieces of wood mortised into others to strengthen a building. BARGE-BOARD, an inclined projecting board, often richly ornamented, at the gable of a building to hide the timbers of the roof. BARGE-COURSE, the part of the tiling projecting beyond the principal rafters.

BARGEER, n. *bâr-gēr'* [Pers.]: in Indian native armies, a trooper who does not find his own horse.

BARGHAIST, n. *bâr'gāst*, or BARGUEST, *bâr'gĕst* [Eng. *bar*, a gate; *ghaist, guest*, a ghost]: in *myth*, a demon with frightful teeth, long claws, and staring eyes, believed to have its habitat in Yorkshire, said to appear near gates and stiles.

BARHAM, *bâr'am*, RICHARD HARRIS: 1788–1845, June 17; b. Canterbury, Eng.: author of the *Ingoldsby Legends*. He succeeded to the manor of Tappington while yet a child, and was sent to St. Paul's School, but had his school life interrupted, and his right arm crippled for life, by being upset in the Dover mail. In 1807, he entered

Brasenose College, Oxford, was ordained 1813, and appointed 1821 minor canon of St. Paul's Cathedral, and three years later a royal chaplain. His first contributions were sent to *Blackwood's Magazine*, but with the commencement of *Bentley's Miscellany*, 1837, he began his series of inimitable burlesque metrical tales under the pen-name of Thomas Ingoldsby. They were first collected into a volume 1840, and the third series was published 1847 with a brief memoir of the author by his son. The *Ingoldsby Legends* at once became popular from their droll humor, fine irony, varied and whimsical rhymes, and quaint out-of-the-way learning. B. was a frequent contributor to the *Edinburgh Review* and *Literary Gazette*, and wrote a third of the articles in Gorton's *Biographical Dictionary*, besides a novel in 3 volumes entitled *My Cousin Nicholas*. He died in London. His *Life and Letters* appeared in 2 vols. in 1870.

BAR HARBOR, Me.: see MOUNT DESERT.

BARI, *bâ're* (ancient *Barium*): city in the kingdom of Italy, cap. of the province of B.; on a peninsula in the Adriatic; lat. 41° 8′ n., long. 16° 53′ e.; about 140 m. n.n. e. from Naples. It is strongly fortified, and defended by a massive old castle of Norman origin, nearly a mile in circumference. The city is divided into the old town and the new. The streets, with few exceptions, are narrow and gloomy. B., which is the see of an archbishop, has manufactories of cotton, silk, linen, soap, etc., and carries on an active export-trade in oil, corn, and fruit, with Trieste and Dalmatia. Its harbor does not admit of the entrance of large vessels; but its quay and roadstead are good. It has some fine ecclesiastical structures, the most notable of which is the priory of St. Nicholas, a noble specimen of the Lombard style of architecture, founded, 1087, and liberally endowed by the brothers Guiscard. Within the walls of this building, Urban II., 1098, held a council of Greek and Latin bishops, with the view of settling the differences between the two churches; and Roger II. was here crowned king of Sicily. The priory contains some interesting monuments and relics, the most remarkable of which is the tomb of Bona Sforza, Queen of Poland, who died in the castle 1557. B. is one of the cities believed to have been founded by Iapyx, son of Dædalus. Its coins show it to have been a place of considerable note among the Greeks as early as B. C. 3d c. The Romans appear to have held it in but little repute; but it rose in esteem when, in the 10th c., it fell into the hands of the Greek emperors, who made it the capital of Apulia, and the residence of a viceroy. It was twice taken in the 11th c. by the Normans, who added to its strength and importance. Pop. (1901) 77,478.

The province of BARI has 2,280 sq. m.; pop. (1901) 827,698.

BARIDIUS, n. *bâr-ĭd'ĭ-ŭs* [Gr. *baris*, a kind of flat boat;

eidos, form, appearance]: genus of beetles belonging to family *Curculionidæ*. The species are generally small cylindrical insects, black and covered with a whitish down. They feed on aquatic plants.

BARIGAZZO, *bâ-rē-gât'so:* village of the province of Modena, Italy; remarkable for the streams of fire several feet high which issue out of the soil in the vicinity, and continue to burn for days without intermission.

BARILLA, n. *bă-rĭl'lă* [Sp. *barrilla*]: an impure carbonate of soda, procured from plants which grow in salt-marshes or other places near the sea, and which forms a considerable article of commerce, being used in the manufacture of soap and of glass, and for other purposes in the arts. The greatest quantities of B. are produced in Spain and the Balearic Islands; but the Canary Islands, Italy, and France, contribute a part. It is procured by burning the plants, much in the same way that sea-weeds are burned upon the coasts of Scotland to procure kelp. The Spanish B. is most esteemed, especially that produced near Alicante, which is obtained chiefly from the *Salsola sativa*, a plant of the nat. ord. *Chenopodiaceæ*. This plant is there cultivated in grounds close by the sea, embanked on the side nearest it, and furnished with floodgates, through which the salt water is occasionally admitted. It is cut in September, dried in small heaps, and then burned in a hole in the ground. Other species of *Salsola* (Salt-wort) as *S. Tragus* and *S. Kali* (the latter, a common native of the shores of Britain), are also burned for B., although they yield it in smaller quantity than *S. sativa*. B. is made in France from *Salicornia herbacea* or *annua* (Glass-wort), another of the *Chenopoiaceæ*, plentiful also in salt-marshes on the shores of Britain and other parts of Europe. The manufacture of B. has greatly declined, from the fact that soda can now be made artificially from common salt. See SALT-WORT.

BARINAS: see VARINAS.

BAR'ING: the family name of one of the most influential financial establishments in the world, the well-known house of Baring Brothers & Company. John Baring, the father of the founders, was a German cloth maker who engaged in business in a small way at Larkbear, Devonshire, England, in the earlier half of the 18th c. His sons, Francis and John, established the firm of Baring Brothers in London, 1770. Since 1890 the house has been reorganized as a limited banking company.

BA'RING, ALEXANDER: see ASHBURTON, LORD.

BARING, SIR EVELYN (VISCOUNT CROMER), an English colonial civil servant: b. Norfolk, Eng., 1841, Feb. 26. He served in the Royal Artillery, became secretary to his cousin, the Earl of Northbrook, one of the controllers-general of Egyptian finance (1879), finance minister of India (1880), and agent and consul-general in Egypt from 1883-1907. He was created a peer in

1892, viscount in 1899, and is author of *Staff College Essays; The War Game ; Modern Egypt* (1908).

BARING, Sir Francis, English banker: b. Larkbear, England, 1740; d. 1810. He obtained a commercial training, founded a large and successful business, became a director of the East India Company, and was created a baronet in 1793. He took an active part in the discussions relative to the bank restriction act of 1797, and at the time of his death was reckoned the first merchant in Europe.

BARING, Sir Francis Thornhill: see Northbrook, Lord. (1790–1866).

BARING, Sir Thomas, English banker: b. 1772; d. 1848, April. He was the eldest son of Sir Francis, whom he succeeded in the baronetcy. He was chiefly remarkable as an admirer and encourager of art. His magnificent collection of paintings was dispersed by public sale after his death. His fourth son, Charles Thomas (1807–79), was bishop of Durham.

BARING, Thomas, English banker and politician, brother of the first Lord Northbrook: b. 1799; d. 1873. He devoted himself early to commercial pursuits, and also to politics, in which he was a Conservative, thus taking the opposite side to his brother. He entered Parliament in 1835, representing the borough of Huntingdon from 1844 till his death.

BARING, Thomas George: see Northbrook, Lord (b. 1826; d. 1904).

BARING-GOULD, *bā'rĭng-gôld*, Sabine: clergyman of the Church of England, and voluminous author: b. in Exeter, England, 1834. He graduated at Clare College, Cambridge, 1856; was appointed incumbent of Dalton, Thirsk, 1869, and rector of E. Mersea, Colchester, 1871; succeeded to the family property 1872; and 1881 became rector of Lew-Trenchard, Devon, where the family has been seated nearly 300 years. His publications include: *Paths of the Just* (1854); *Iceland: its Scenes and Sagas* (1862); *Postmediæval Preachers* (1865); *Curious Myths of the Middle Ages* (1st series 1866, 2d 1867); *Curiosities of Olden Times* (1869); *The Origin and Development of Religious Belief* (vol. i. 1869, ii. 1870); *The Golden Gate* (1869–70); *The Silver Store* (1870–1883); *In Exitu Israel* (1870); *Legendary Lives of Old Testament Characters* (1871); *One Hundred Sermon Sketches for Extempore Preachers* (1872); *Secular vs. Religious Education* (1872); *Lives of the Saints* (15 vols., 1872–77); *Village Conferences on the Creed* (1873); *The Lost and Hostile Gospels* (1874); *Some Modern Difficulties*, sermons (1875); *Village Sermons for a Year* (1876); *The Mystery of Suffering* (1877); *Mehalah* (1880–85); *John Herring* (1883–86); *Court Royal* (1886–88); *Red Spider* (1887–88); *The Gaverocks* (1887–88); *Richard Cable* (1888); *Eve*

(1888); *The Sacristy, a Quarterly Review of Ecclesiastical Art and Literature* (1871–73); *Germany, Present and Past* (1879–83); *Sermons to Children* (1879); *The Preacher's Pocket* (1880); *The Village Pulpit* (1881–87); *Church Songs* (1884); *The Seven Last Words* (1884); *The Passion of Jesus* (1885–6–7); *The Nativity* (1885); *Germany*, in *Story of the Nation Series* (1886); *Our Parish Church* (1886); *The Resurrection* (1888); *Our Inheritance, a History of the Holy Eucharist in the First Three Centuries* (1888); *The Penny-Comequicks* (1889); *Arminell* (1889); *Historic Oddities and Strange Events* (1889–91); *Old Country Life* (1889); *History of the Church in Germany* (1891); *Urith* (1890); *In Troubadours Land* (1890); *Conscience and Sin* (1890); *Songs of the West* (1891); *In the Roar of the Sea* (1892); *The Tragedy of the Cæsars* (1892): *Curious Survivals* (1892); *Mrs. Curgenoen* (1893); *Cheap Jack Zita* (1893); *The Deserts of Southern France* (1894); *The Queen of Love* (1894); *Noémi* (1895); *The Old English Fairy Tales* (1895); *Napoleon Bonaparte* (1896); *The Broom Square* (1896); *A Study of St. Paul* (1897); *Guavas the Tinner* (1897); *Bladys* (1897); *The Sunday Round*, sermons (1898); *Domitia* (1898); *Pabo the Priest* (1899); *A Book of the West* (1899); *Furze-Bloom* (1899); *The Crock of Gold* (1899); *Winefred* (1900); *A Book of Dartmoor* (1900); *In a Quiet Village* (1900); *Virgin Saints and Martyrs* (1900); *The Frobishers; A Book of Brittany; Royal Georgie* (1901); *Miss Quillet; Nebo the Nailer* (1902); *Brittany* (1902); *A Book of North Wales* (1903); *Chris of All Sorts* (1903); *A Book of Ghosts* (1904); *In Dewisland* (1905); *A Book of South Wales* (1905); *A Book of the Riviera* (1905); *A Memorial of Nelson* (1905); etc.

BARINGO, a lake in East Africa, northeast of the Victoria Nyanza, about 20 miles long, 200 square miles in area, and between 3,000 and 4,000 feet above sea-level. Though fed by many streams, it has no visible outlet. It contains several small islands and was discovered by Thomson in 1883.

BARING LAND, an island in the Arctic Archipelago. The name is also given to a bay and strait. They were named for Sir Francis Baring, who was first lord of the admiralty at the time of their discovery.

BARIS, n. *bär'ĭs* [Gr. *baris*, a row-boat]: in *Egyptian antiq.*, a flat-bottomed boat for merchandise on the Nile: in *art*, the sacred boat represented as conveying a god or some sacred object: in *entom.*, genus of beetles belonging to the family *Curculionidæ*. The species feed upon the dead parts of trees. *B. liguarius* preys both in the larva and the perfect state on the elm.

BARITA, *ba-rī'ta:* genus of large Australian birds, placed by some ornithologists in the family of Shrikes (q.v.), (*Laniadæ*), and by others in that of Crows (q.v.), (*Corvidæ*). The bill is large, conical, scarcely curved, the base of it extending remarkably backward on the forehead.

The best known species is the Piping Crow, or Piping Grakle, or Jar-ra-war-nang of N. S. Wales (*B. Tibicen*). It preys on small birds, is gregarious, has a melodious voice, is easily tamed, soon learns to whistle tunes, and has great power of mimicking the voices of other birds.

BARITE, *bă'rīt* [Greek, 'heavy,' in allusion to its high specific gravity]: a mineral having the formula $BaSO_4$, and crystallizing in the orthorhombic system, but also occurring massive and in granular, earthy, and stalactitic forms. It is usually white or nearly so, and has a hardness of from 2.5 to 3.5. Its specific gravity ranges from 4.3 to 4.6, and from this circumstance the mineral is often called 'heavy-spar.' Barite was first examined (in 1602) by Casciorolus, a shoemaker of Bologna, who discovered that it becomes phosphorescent when heated with combustile matter, and gave it the name *lapis solis*, or 'sun stone.' Barite occurs in many parts of the world, and in large quantities. In the United States it is found abundantly in many States, notably in Virginia, North Carolina, and Missouri, and in the Lake Superior region. See also BARIUM.

BARITONE, or BARYTONE, *băr'ĭ-tōn:* a male voice, whose compass partakes of those of the common bass and the tenor, but does not extend so far downward as the one nor to an equal height with the other. Its best tones are from the lower A of the bass clef to the lower E or F in the treble; yet we find Verdi and Meyerbeer exacting G and even A flat from it. This name is also given to the smaller bass saxhorn in B flat or C, used in reed and brass bands.

BARIUM, n. *bā'rĭ-ŭm* [Gr. *barus*, heavy], (sym. Ba, at. wt. 137.4): the metal present in heavy spar (sulphate of baryta) and baryta. It was discovered 1808 by Sir Humphrey Davy, a silver-white metal. It may be obtained by the electrolysis of the molten chloride. It decomposes water readily at ordinary temperatures, and exposed to the air, quickly combines with oxygen, forming the *oxide of B.* (BaO), or Baryta (q.v.). By the last statement it will be seen that this metal can never be made available for the ordinary purposes of the common metals, such as iron or aluminum. It can only be preserved by being thoroughly protected from air and water. This may be done by immersing it in an oil which contains neither oxygen or water. Barium has been found useful in spectroscopic researches and also as an absorbent of gases in the production of high vacua. *B. sulphide*, BaS, is obtained when the sulphate, $BaSO_4$, in powder is mixed with finely pulverized charcoal, and the whole being placed in a crucible, is raised to a red heat in a furnace. The result is that 4 atoms of the carbon (C) of the coal carry off the 4 atoms of oxygen in the sulphate of B. as carbonmonoxide (CO), while the B. united solely with sulphur is left behind as the sulphide of B. (BaS). The *Chloride of B.* is prepared by adding hydrochloric acid

(HCl) to a solution of the sulphide of B. (BaS), when hydrosulphuric acid (H_2S) escapes, and chloride of B. remains behind, and on evaporation of the liquid, is obtained in crystals.

BARK, n. *bârk* [Dan. *bark:* Icel. *börkr*]: the outside covering of a tree: V. to peel or strip off bark. BARKING, imp. BARKED, pp. *bârkt.* BAR'KER, n. one who removes bark, also a machine for cutting the bark off logs for use in paper-making. BARKERY, n. *bârk'ėr-ĭ,* a tan-house. BARKY, *bâr'kĭ,* containing bark; covered with bark.

BARK, n. *bârk* [AS. *beorcan,* to bark: Icel. *barki,* the throat; *berkja,* to bark, to bluster]: the peculiar noise or clamor of a dog: V. to make the noise of a dog. BARK'ING, imp. BARKED, pp. *bârkt.* BARK'ER, one which.

BARK, or BARQUE, n. *bârk* [F. *barque*; mid. L. *barca* or *barga,* a boat]: a three-masted vessel square-rigged on the foremast and mainmast (like a ship), but having the mizzen (or rear) mast fore-and-aft rigged, like a sloop; any small boat, esp. a sailboat. BARKENTINE, or BARKANTINE, n. a three-masted vessel having the foremost square-rigged, and the main and mizzen masts fore-and-aft rigged.

BARK (*cortex*): in phanerogamous or flowering plants, the external covering of the stem. It is composed of layers of cellular tissue, while the woody stem, to which it forms a sort of sheath, is vascular. In endogenous plants (palms, etc.), there is not, in general, a very marked line of separation between the B. and the vessels or vascular bundles of the stem, so that these plants are generally, though incorrectly, said to have no bark. It is in exogenous plants, and especially in perennial woody stems, that the development of B. is fullest, and the distinction between wood and B. most marked. The outermost layer of the B. of exogenous plants is the *epidermis* (q.v.), which, however, is in general seen only in annual stems, and in the youngest parts of woody stems; peeling off, as the stem becomes older, with the outer layers of the true B. Beneath the epidermis is the true B., of which the outer layer is called the *epiphlœum,* or the corky layer, and consists of cells, usually rectangular and flattened, with thick walls. The next inner layer of the B. is called *mesophlœum,* or green layer, and is generally formed of a cellular tissue of roundish cells with thin walls. These layers are sometimes very distinctly separated from one another, and sometimes pass gradually into one another; sometimes there is merely a continuous cellular tissue. Within the true B. is a very distinct layer, the inner B., *liber* [Lat.] or *endophlœum* [Gr. inner bark], also frequently called Bast, which is composed of bundles of woody fibre or vascular tissue mixed with cellular tissue. The layer of Cambium (q.v.) is regarded often as belonging to the inner B., but belongs rather to the vascular part of the stem. In the inner B. are sometimes found cells containing a milky juice, as in the *Apocynaceæ,* or vessels for a milky juice, as

in the common fig. The combined strength and flexibility of the fibres of the inner B. render it useful for various purposes. See FIBRE and BAST. In the true B., the peculiar juices and most characteristic substances elaborated by the plant are very generally found, for which reason that part is often of the greatest importance in medicine and the arts. The B. of many trees abounds in *tannin* or *tannic acid* (q.v.).

The B. of a stem or branch not more than one year old exhibits only a cellular integument or epidermis with an interior lining of woody fibre—the inner B.; but new layers are added from year to year, the B. as well as the woody stem being increased from the cambium, the mucilaginous layer which is interposed between them, and which particularly abounds in spring, when the separation of the B. from the stem is most easy. The annual layers, however, cannot long be distinctly recognized in the B. as in the wood; and in the older portions of woody stems, the outermost parts of the B. become desiccated and lifeless, and are in general gradually thrown off. On this account, those mosses, lichens, and other plants which attach themselves only to the outermost layer of the B. of trees, and derive their nourishment from it, cannot be regarded as true parasites, as they are in no degree supported by the juices of the stem, but only consume and remove external matter already destitute of life. The B. of some trees is remarkable for the thickness which it acquires, as that of the cork-tree, in which the *epiphlœum* is formed of many layers of cells. The outer parts of thick barks very often crack, to admit of the expansion of the stem within; in the lace-bark tree of the West Indies, the fibres of the inner B. become partially separated as it is distended, forming lozenge-shaped meshes arranged with beautiful regularity.

The connection between the cellular tissue of the B. and that of the pith in the center of the tree is continually maintained by means, in exogenous stems, of the medullary rays. See EXOGENOUS PLANTS: PITH. The B. is a protection to the young and tender wood; it appears also to exercise functions analagous to those of the leaves, which, when young, it resembles in its color, and which are regarded as dilatations of it, so that it has been called the 'universal leaf' of a plant.

BARK, in Medicine, etc.: see ANDIRA (*Cabbage B.*, *Surinam B.*): ANGOSTURA B.: CARIBBEE B. (*Jamaica B.*, *St Lucia B.*, *Piton B.*): CASCARILLA (*Cascarilla B.*, *Eleutheria B.*): CINCHONA (*Cinchona B.*, *Peruvian B.*, *Jesuits' B.*, China, Cascarilla, *Arica B.*, *Calasaya B.*, *Carabaya B.*, *Huamalies B.*, *Huanuco B.*, *Jaen B.*, *Loxa B.*, *Maracaibo B.*, *Ash B.*, *Crown B.*, *Silver B.*, *Yellow B.*, *Tan B.*, etc.): CLOVE B.: COPALCHE B.: CULILAWAN B.: WINTER'S BARK.—B. mentioned without any prefix, is always Cinchona, otherwise called Peruvian or Jesuits' B.

Bark, in Dyeing, Tanning, and other purposes in the arts: see under names of the trees that produce it.

BARK, FOR TANNING: bark which abounds in tannic

acid; though the B. of many trees is capable of being used for tanning (q.v.). Oak B. is principally used in Britain, and throughout Europe; also in N. America, although that of America is obtained from species of oak different from the European; in Spain, the inner layer of the B. of the cork oak, or cork-tree, is employed, and it is to some extent imported into Britain for the use of tanners. The B. of the chestnut is also much esteemed. Larch B. and willow B. are used in preparing some kinds of leather. The B. of the birch and that of the alder also are employed; birch B. being, however, more esteemed for steeping fishermen's nets and cordage, to preserve them from rotting, than for the preparation of leather. Different species of *Acacia* (q.v.) and of *Eucalyptus* (q.v.) furnish barks for tanning in Australia, some of which have, to a small extent, become articles of commerce.

The *barking* of trees can be accomplished with facility only in spring, when the sap has begun to circulate. The tree being felled, the rough external lifeless parts of the B. are removed as useless, by means of a sharp instrument called a *scraper;* the smaller branches are cut into lengths of about two feet, and their B. is loosened by beating with a mallet, and easily taken off; the B. of the trunk and main branches is cut through by a chisel-like instrument, called a *barking-iron*, into similar lengths, each of which is divided longitudinally, and finally stripped off by the aid of mallets, chisels, etc. The B. is sometimes dried in sheds, being placed on narrow shelves or frames in such a way that there may be a very free circulation of air about it; sometimes in the open air, when it is very generally made to rest in a sloping position against trunks of trees placed horizontally at a little distance from the ground, the larger pieces of B. being placed so as to protect the smaller both from sun and rain. Great care is necessary in the drying of B., as it is much spoiled if allowed to get mouldy, and is liable to suffer injury from rain or from the exposure of its inner surface to the sun.—Oak and birch B. are usually about equal in their price, which, however, varies very much. Larch B. is much less valuable; it is also of much greater bulk in proportion to its weight. The B. is a very important source of revenue from forests.

BARKAL, or Jebel Barkal, *jĕb'ĕl bar'kal:* a singular sandstone rock in Nubia; lat. 18° 31′ n., long. 31° 46′ e., about a mile from the right bank of the Nile. It is quite isolated, perpendicular on the side facing the river, and very steep on all. It is about two m. in circumference at the base, and 400 ft. in height, its summit forming a broad plateau. Between it and the river are the remains of some magnificent temples, the two principal ones being known as the Typhonium, and the Great Temple, one of the largest monumental ruins of Nubia. The ancient city of Napata is supposed to have been in the vicinity. The two red granite lions, now in the Egyptian Room of the British Museum, were brought from here in 1838 by Lord Prudhoe.

BARK BEETLE, or BARK-CHAFER: name common to many of *Scolytidæ*, a large family of coleopterous insects (q. v.), called by entomologists *Xylophaga* [Gr. wood-eaters]. They all are small, and generally of uniform color; they have hard bodies, and short, often club-shaped antennæ. Most of the family live in wood or other vegetable substances, as mushrooms, dried plants in herbariums, etc., and some of them are extremely injurious to living trees. Those called B. beetles or bark-chafers bore holes in the bark, and deposit their eggs in the inner bark, in which the larvæ excavate pathways, often causing the death of the tree. One species in particular, sometimes called the common Bark-chafer (*Tomicus typographus*), and sometimes the Typographer Beetle, from the figure of its burrows, has from time to time appeared in extraordinary

Tymicus typographus.
a, natural size; *b*. insect magnified; *c*, galleries made by the insect.

numbers, ravaging the forests of Germany. The various species of Scolytus, Tomicus, and Xyloterus give rise to a disease similar to fireblight, by their ravages beneath the twigs of fruit trees, causing the bark to shrivel and peal off as if a fire had run through the orchard. The spruce forests of Maine and other parts of northern New England have, since 1818, been devastated by *Dendrocotonus piceaperda* of Hopkins. It attacks and kills vigorous trees in perfect health, the largest and best stands of timber suffering most from its ravages.

BARKER, *bâr'ker*, ALBERT SMITH, American naval officer· b. Massachusetts, 1843, March. He was gradu-

ated at the United States Naval Academy in 1859; served on the frigate *Mississippi* in the operations to open the Mississippi river in 1861–3, taking part in the bombardment and passage of forts Jackson and St. Philip and Chalmette batteries, and capture of New Orleans, and the attempted passage of Port Hudson, where his vessel was destroyed. He became captain 1892, May 5; commanded the cruiser *Newark* during the war with Spain; subsequently succeeded to the command of the battleship *Oregon*, which he took to Manila; became a rear-admiral 1899, Oct. 10, and was placed in command of the Norfolk Navy Yard in 1899; in 1900, July, succeeded the late Rear-Admiral Philip as commandant of the Brooklyn Navy Yard, remaining in that position till 1903, April 1; and from 1903, April 30, till 1905 was commander-in-chief of the North Atlantic Squadron.

BARKER, Edmund Henry: 1788, Dec. 22—1839, March 21; b. Hollym, Yorkshire; studied at Cambridge. Besides editions of several Latin classics, and numerous contributions to periodicals, particularly to the *Classical Journal*, he undertook a revision of Stephen's *Thesaurus Linguæ Graecæ*. This gigantic work, violently assailed in the *Quarterly Review* by Blomfield, was pub. by Valpy, London (13 vols., 1816–28). In 1812, appeared the first volume of his *Classical Recreations*. He supplied materials for Sturtz's *Etymologicum Guidanum;* translated, among other German works, Buttman's *Greek Grammar for Schools;* and collected the mass of anecdote and criticism relative to his friend Dr. Parr (pub. in 2 vols., 1828, 9), under the title of *Parriana*, a work well-nigh unreadable, from its superabundant and ill-digested matter. He died in London in extreme poverty.

BARKER, Fordyce, M.D.: 1818, May 2—1891, May 30; b. Wilton, Me.: surgeon. He graduated at Bowdoin College 1837, afterward studying in Harvard Univ. and at Edinburgh, completing his education in Paris 1844. The next year he began practicing medicine in Norwich (1845), filling at the same time the chair of midwifery in the medical dept. of Bowdoin College. From 1850 to 57 he was prof. of midwifery in the New York Medical College, and from 1860 in Bellevue Hospital Medical College, New York. In 1856 Dr. B. was made pres. of the New York State Medical Soc., and in 1882 pres. of the New York Acad. of Medicine. Among his works are: *On Sea-Sickness* (1870) and *On Puerperal Diseases* (1872).

BARKER, George Frederick, M.D. American physicist; b. Charlestown, Mass., 1835, July 14. After an academic education, he was apprenticed to a philosophical-apparatus maker in Boston. At the age of 21 he entered the Yale (Sheffield) Scientific School, and two years later graduated, having filled the post of assist. in chemistry under Prof. Silliman, 1857. In 1860 he was assist. to the prof. of chemistry in Harvard Medical College. The

next year he was prof. of nat. sciences in Wheaton (Ill.) College, and a year later was acting prof. of chemistry in the Albany Medical College, where also he studied medicine, graduating 1863, when he became prof. of nat. sciences in the Western Univ. of Penn. at Pittsburgh. In 1865 he was made demonstrator of chemistry in the medical dept. of Yale, and 1866 occupied Prof. Silliman's chair in his absence. In 1867 he was placed in charge of the dept. of physiological chemistry and toxicology at Yale. From 1872 to 1900 he was prof. of physics at the Univ. of Penn. at Philadelphia, and since 1900 has been professor emeritus. In 1881 he was one of the United States commissioners to the International Electrical Exhibition in Paris, when the French govt. decorated him with the Legion of Honor, with rank of commander. In 1884 he was appointed by the pres. on the U. S. Electrical Commission. He has achieved repute also as a toxicologist. Dr. B. has delivered many lectures and addresses; was pres. (1879) of the Amer. Assoc. for the Advancement of Science, editor of the *Journal of the Franklin Institute* 1873–5, and for many years one of the editors of the *American Journal of Science*. He has also, for a number of years, edited the *Annual Record of the Progress of Physics*, in the Smithsonian reports. He has written many important papers for scientific periodicals; and his *Text-book of Elementary Chemistry* (1870) has been transl. into French and Japanese. His publications have chiefly appeared in the *American Journal of Science*, *American Chemist*, and *Proceedings of the American Philosophical Society*. Others are, besides text-books on chemistry: *Nitrous Oxide* (1866); *Correlation of Vital and Physical Forces* (1871); *Progress in Physics*.

BARKER, Jacob: capitalist: 1779, Dec. 7—1871, Dec. 26: b. on Swan Island, Me.; of Quaker parentage. He received an early training for a business life, and before he was of age was engaged in heavy commercial undertakings in New York and owned five trading ships, but he failed disastrously, 1801. Recovering from this blow through fortunate contracts with the govt., he grew rapidly rich, and 1812 undertook to raise a loan of $5,000-000 for the govt. He was one of the original members in the Tammany soc. in New York, was elected a N. Y. state senator, established the Exchange bank in Wall st., New York, which failed 1819, and also organized a life and fire insurance co., which met the same fate. His unusual methods in finance having aroused bitter antagonism among financiers, he was brought to trial for fraud on account of his connection with the latter institution, but the indictment was quashed. In 1834 he moved to New Orleans, where he was admitted to the bar, was prominent in business and in politics, and accumulated a large fortune, of which the civil war deprived him. He died in Philadelphia. See 'Incidents,' etc., in his life (New York, 1855).

BARKER, James Nelson, American author: b. Philadelphia, 1784, June 17; d. Washington, 1858, March. He served with distinction in the War of 1812, but subsequently entered civil life, becoming mayor of his native city in 1820. He was collector of customs at Philadelphia 1829–38 and during the ensuing 20 years was comptroller of the United States Treasury. His dramatic works, especially *Marmion, The Indian Princess,* and *Smiles and Tears* were popular.

BARKER, Lewellys Franklin, Canadian-American anatomist and educator: b. Norwich, Ontario, 1867, Sept. 16. He was educated at the Ontario public schools and Pickering College 1881–4, and graduated from the medical department of the Univ. of Toronto in 1890. He was house officer of the Toronto General Hospital 1890–1; assistant physician Johns Hopkins Hospital 1891–2; fellow in pathology 1892–4; associate in anatomy Johns Hopkins Univ. 1894–7; student at the Univ. at Leipzig 1895; assistant resident pathologist Johns Hopkins Hospital 1894–9; assistant professor of anatomy Johns Hopkins Univ. 1897–9; Johns Hopkins medical commissioner to the Philippines 1899; associate professor of pathology 1899–1900; professor and head of the department of anatomy in Rush Medical College, Univ. of Chicago 1900–5; and since 1905 has been professor of medicine in Johns Hopkins Univ. and chief physician to the Hospital. He has written *The Nervous System and Its Constituent Neurones* (1899); *Translation of Werner Spalteholz's Hand Atlas of Human Anatomy* (1900); *Laboratory Manual of Human Anatomy* (1904); etc.

BARKER, Matthew Henry, English novelist: b. Deptford, 1790; d. London 1846, June 29. He followed the sea, and under the name of *The Old Sailor,* wrote spirited sea tales, very popular in their day. They include *Land and Sea Tales* (1836); *Life of Nelson* (1836); *Topsailsheet Blocks* (1838; new ed. 1881); and *The Victory, or the Wardroom Mess* (1844).

BARKER'S MILL, *bâr'kẹrz* [Fr. *Roue à réaction, Ger. Segner's Wasserrad*]: a form of waterwheel devised by Dr. Barker, some 300 years ago. It turns about a vertical axis, down which the water that is to operate it flows. At the lower extremity of the vertical axis two or more hollow arms project horizontally, like the spokes of a wheel. Water is discharged tangentially from the ends of these hollow arms, and by its reaction causes the wheel to rotate. Barker's mill is now used only as a toy, although a modification of it, invented by Whitelaw, is still used, to some extent, as a source of power in Great Britain, where it is known as the Scotch turbine. The B. M. is interesting historically as being the first reactionary water-wheel, and suggesting the principles later developed in the turbine water-wheel, the most effective wheel known for utilizing water power. See Water-power; Water-wheel; Turbine.

BARK'ING: town of Essex, on the left bank of the Roding, abt. 2 m. above its junction with the Thames, five m. n.e. of London. The mouth of the Roding is often called B. creek. *Barking Abbey* was one of the richest nunneries in England. It was founded about 677 by St. Erkenwald, Bp. of London, whose sister St. Ethelburga, was the first abbess. In 870, it was burnt by the Danes, but was rebuilt. Scarcely more than the gate-house now remains. The Abbess of Barking was one of four ladies who held the rank of baroness in right of their office. Several queens of England assumed this office. Pop. of town 21,500.

BARK'ING-BIRD, n.: a bird—the *Pteroptochos Tarnu* —found in the islands of Chiloe and Chonos, off the west of Patagonia. It is called by the natives 'Guid-guid.' Its voice is like the yelping of a small dog.

BARK'-STOVE, in Gardening: a kind of hot-house intended for those plants which require not only the greatest heat, but also a continually moist atmosphere. It derives its name from the use of tanners' bark, for the purpose of producing this atmospheric condition. The bark is placed in a pit, lined and paved with brick, and pots containing tropical plants are sunk in it; by which means the plants not only enjoy a moisture resembling that of their native climates, but the earth around their roots is kept uniformly and moderately heated. The principle of the B. is adopted in pineries, palm-houses, etc., also in forcing-stoves for producing the ordinary fruits and vegetables of temperate climates at unusual seasons. A considerable heat results from the fermentation of tanners' bark, but it is not upon this that its value in the B. chiefly depends.

BAR'LAAM AND JOS'APHAT: one of the most widely-spread religious romances of the middle ages, relating the conversion of the Indian prince Josaphat by the hermit Barlaam; thereby illustrating the power of Christianity to overcome temptation, and proving its superiority over all other creeds. The story, however, has been discovered to be nothing more or less than a Christianized version of the legendary history of Buddha, agreeing with it in all essentials and many details. The celebrated divine, John Damascene, is regarded as the author of the original Greek MS., which was first published by M. de Boissonade in the 4th vol. of his *Anecdota* (Paris, 1832), and translated into German by Liebrecht (Münst. 1847). But even in the middle ages, a Latin version of this romance had been extensively circulated. About the end of the 15th c., it was often printed in a detached form, and later, it appeared among the works of John Damascene (Paris, 1609). Vincent de Beauvais wove the story into his *Speculum Historiale*. From the Latin version sprang three French poetical versions belonging to the 13th c., as yet unprinted. The Italian *Storia di S. Barlaam* (latest ed. Rome, 1816) may be traced to a Provençal original as early as the beginning

of the 14th c. In Germany, Rudolf von Ems derived his poem, *B. and J.*, first printed at Königsberg (1818); later at Leipsic, from the Latin of John Damascene. There is also an Augsburg impression of a prose translation of the ancient Latin text, belonging to the close of the 15th c. The Spanish *Historia de B. y J.*, by Juan de Arze Solorzano (Madrid, 1608), the Polish poetical version, by Kulizowsky (Cracow, 1688), as well as the Bohemian (Prague, 1593), all are borrowed from the Latin; while the Icelandic *Barlaams Saga*, and the Swedish popular tale, *B. och J.*, have a German source. A Norwegian version printed from an old vellum MS. of the beginning of the 13th c., said to be by King Hakon Sverreson, appeared 1851. This romance has even been rendered into the Tagala language of the Philippines. See *Buddhist Birth Stories*, by Rhys Davids (1881).

BARLACCHI, *bâr-lâk'kē*, THOMAS: middle of 16th c.: Italian engraver, who reproduced some designs from Raphael, and made besides many monuments and designs in architecture.

BAR-LE-DUC, *bâr-lė dük'*, or BAR-SUR-ORNAIN, *bâr-sür-or-năn'*. town in the dept. of the Meuse, France. On the Ornain, about 125 m. e. from Paris, with which it is connected by railway, and with the Rhine by canal. There are manufactures of cotton and calico, and a considerable trade in timber (from the Vosges, for the use of Paris) and in iron, wool, and wine. B. has a communal college, normal school, and public library. Its origin dates from the 10th c. Pop. abt. 19,000.

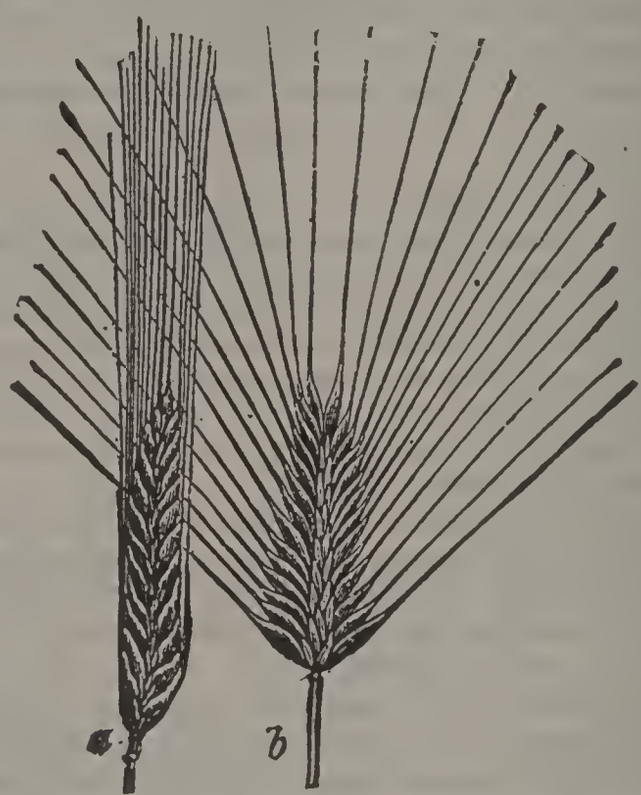
BARLERIA, n. *bar-lēr'ĭ-a* [after *James Bauelier*, a Dominican traveler]: genus of plants, order *Acanthaceæ*, family *Ballerideæ*. Various species are found in India, armed and unarmed, shrubby or herbaceous, with yellow, pink, blue, or white flowers.

BARLES, *bârl*, LOUIS: 17th c.: a French physician, of Marseille. Among his works are: *Nouvelles découvertes sur les organes des femmes servant à la génération* (Lyon, 1674); *Nouvelles découvertes sur les organes des hommes servant à la génération* (Lyon, 1675). These are translations of the works of Regnier and of De Graaf upon the same subject.

BARLETTA, *bâr-lĕt'tâ:* a fortified seaport of Italy, province of Bari, on the Adriatic. It has large shipping-trade with Greece, the Ionian Islands, and other ports of the Adriatic. The town is well built, handsome, and clean; has a fine cathedral, a colossal statue supposed to represent the Emperor Heraclius, a college, theatre, and castle, formerly one of the most impregnable fortresses in Italy. A feature of B. is the mole which protects the harbor. During the blockade of B. by the French, 1502–3, which ended in the defeat and death of their commander, the Duke of Nemours, the celebrated combat between eleven cavaliers of France, and as many of Spain, in which the Chevalier Bayard so distinguished himself, occurred, ending in a drawn battle. POP. (1901) 42,022.

BARLEY, n. *bâr'lĭ* [AS. *bærlic*—from *bere*: W. *barllys*—from *bara*, bread; *llys*, a plant]: a well-known grain, much used for making malt; the *Hordĕŭm vulgārĕ*, ord. *Gramin'ĕæ*. BARLEY-CORN, n. a grain of barley; the third part of an inch in length—said to be the origin of our measure of length, three barley-corns placed end to end being one inch. BARLEY-SUGAR, a sweetmeat, formerly made with a decoction of barley. See SUGAR. BARLEY-WATER, an infusion of barley. BARLEY-BRAKE [perhaps for *parley-brake*]: a rural play. PEARL-BARLEY, barley dressed for domestic use. BARLEY-BREE, in *Scot.*, malt liquor.

BAR'LEY (*Hordeum*): genus of Grasses, to which belongs one of the most extensively cultivated kinds of grain. The genus is distinguished by spiked inflorescence, three



Barley.

a, two-rowed barley; *b*, sprat or battledore barley.

spikelets being always situated upon each tooth of the rachis, of which sometimes only the middle one is fertile, and sometimes all three, so that in the former case the fruit-bearing spike is two-rowed, and in the latter case, six-rowed; the glumes are two, containing a single floret; the paleæ two, the outer one awned; and the seed is surrounded by the paleæ.

It is believed by some that the numerous varieties cultivated in the United States and Great Britain all belong to a single species; but most botanists divide them into three: *H. distichon*, with the grains in 2 rows; *H. vulgare*, with 4 rows; and *H. hexastichon*, with 6 rows. There are also kinds with naked seeds, as the Siberian, and the Himalayan, specially adapted to cold regions, and the *Sprat*, or

Battledore, largely grown in Germany under the name *German Rice*. There are also various kinds of B. grasses of comparatively little value. New varieties of B. are sometimes obtained by crossing with rye or wheat. Some varieties are sown in the fall, but in the United States the spring sorts are more largely grown. Brewers prefer the 2-rowed sorts, but they yield less than the 6-rowed. Though B. will grow in very high latitudes, and often yields a good crop where the subsoil is continually frozen, it does not endure the winter as well as rye or wheat, and it suffers greatly from cold rains when the plants are small or when the grain is nearly ripe.

B. has been cultivated from a very early period, and has been more widely disseminated than any of the other cereals. It has been used largely as food for man, but is now used principally for the manufacture of beer and other malt liquors (see MALT); though in some localities the grain is used for feeding live-stock. As compared with wheat or rye, B. is somewhat deficient in protein, but in connection with other materials it is beneficial to horses, cattle, and swine. The straw contains a moderate quantity of nutritive matter, though not in an easily digestible form, especially if the grain is allowed to become dead ripe. B. is sometimes sown immediately after harvest for forage to be used in the fall, and in Cal. large quantities are grown for hay. *Pearl B.*, sold by druggists, is grain from which the husks have been removed and which has been smoothed and polished by passing through a mill made for this purpose. Drinks made from B. are mild and nourishing, and are often used in fevers.

B. can be grown on various kinds of soil, but a rich loam seems specially adapted to its production. In clay soils, also, which are underdrained and thoroughly worked, it makes good return. A finely-pulverized seed-bed should always be provided. B. grows very rapidly, and in the n. United States matures in about three months from the time the seed is sown. In very high latitudes, where the light is almost continuous, it ripens in 6 to 9 weeks. In hot climates two crops are often harvested in a year, the seed of the first being sown in autumn, and that of the last as soon as the first has been gathered. It is not wise to take two crops of B. in succession from the same field; nor should this grain follow a crop of wheat, rye, or oats. It often does well on an inverted sod, especially where clover has been grown; and on rich land which has been kept free from weeds it thrives after hoed crops. As the period of growth of the B. plant is short, it is important that a liberal quantity of food material be supplied, and that it be in a condition to be readily assimilated. And as for malting purposes it is important that the grain throughout a field should ripen at the same time. the fertilizer should be uniformly distributed. If this is neglected, there will be spots in which the growth is rank and the grain will ripen late. If yard manure is used, it should be thoroughly decomposed, but heavy manuring of the preceding crop is better than the direct

application of yard manure when the B. is sown. Guano, or nitrate of soda and superphosphates, are excellent fertilizers to be applied when the land is being prepared to receive the seed. On some soils the application of salt at the time of sowing proves very beneficial. Sowing should be done rather early in the season. From 2 to 3 bushels of seed per acre is required if sown broadcast, and about one-third less if drilled. As drilling secures a more uniform depth of covering as well as a more even distribution of seed, it is the preferable method. A smaller quantity of seed is needed for early than for late sowing, and for poor soils than for those which are rich. The seed should be carefully selected, and a mixture of varieties should be avoided. It should have deeper covering than wheat requires.

If the grain is to be used for malt, the time of harvesting will be of great importance. If cut too early, the grain will shrivel; and if it stands too long, it will shell badly in the field, and will also lose its bright color, on which its value to quite an extent depends. The best time is thought to be when most of the ears point down. B. is sometimes bound in bundles, though many growers handle it as they do grass. It should be well cured before being stacked or put into the barn, and exposure to rain is to be avoided if possible. If grown for feeding, particularly if the straw is to be used for this purpose, the grain should not be so ripe as it should be for malting. Though B. is not as subject as wheat to attacks of diseases and enemies, it is sometimes injured by Smut (q.v.), and Rust (q.v.), and the Hessian Fly (q.v.). The yield of B. varies from less than 10 to more than 60 bushels per acre. The average yield for the United States during 10 years (1895–1904) ranged from 20.4 to 29. bushels.

The annual B. crop of the world is estimated at over 1,000,000,000 bushels, of which about three-fourths is grown in Europe. Great Britain produces about 80,000,000 bushels and imports about 30,000,000 bushels per year. In 1905 the barley crop of the United States amounted to 136,651,020 bushels grown on 5,095,528 acres and valued at $55,047,166. The four leading states in 1904 were Minnesota 32,123,041 bushels, California 28,091,999 bushels, North Dakota 17,518,074 bushels, and Wisconsin 14,941,290 bushels.

BARLEY-BIRD, n.: the wryneck—*Yunx Torquilla.* In e. counties of England, the nightingale.

BARLEY-BREAK, (or Brake): a popular amusement, very common in the reign of James I., and, with certain modifications, in name and practice still existing as a rural game in England and Scotland. Originally, it was played by six people, three of each sex, who were formed into couples. A piece of ground was then apportioned into three parts; and into the centre one, called *hell*, a couple was doomed by lot. The sport consisted in the two in the condemned part 'catching' one of the other couples while

they were in the act of changing places, when the couple caught had to go into the centre. The capture was not easy, for by the rules the capturing couple were bound to keep united, while the others when hard pressed, might sever. When the whole had been caught, the game was ended, and the last couple taken was said to be in hell. Their punishment appears to have consisted in kissing each other. In Scotland, the game consisted in one person chasing the others round the stacks in a farmyard; and when one was caught, he or she had to assist in capturing the rest. The origin of the name is doubtful. Dr. Jamieson suggests that, in Scotland, the locality of the game may have given it its name—'barla-bracks, about the stacks.' The same authority also adds: 'Perhaps from *barley* and *break*, q., breaking of the *parley*, because after a certain time allowed for settling preliminaries, on a cry being given, it is the business of one to catch as many prisoners as he can.' This supposition is not improbable. In the modern games of 'Shepherds a-warning,' and 'Tig,' which appear to have been derived from B., 'a barley' means a *parley*.

BAR'LEYCORN, JOHN: a personification of the spirit of barley, or malt liquor, used jocularly, and also in humorous poetical effusions. There is a whimsical English tract of old date *The Arraigning and Indicting of Sir John Barleycorn, Knt., printed for Timothy Tosspot*, in which Sir John is described as of 'noble blood, well beloved in England, a great support of the crown, and a maintainer of both rich and poor.'

BARLOW, *bâr'lō*, ARTHUR: explorer: 1550–1620. Nothing is related of him until Sir Walter Raleigh placed him in command of an expedition for colonizing purposes in America. B. had two ships and sailed from England 1584, Apr. 27, exploring Pamlico Sound and Albemarle Sound. The chief interest attaching to this expedition is comprised in the fact that B.'s description of the beauty of the country, on his return led Queen Elizabeth, the Virgin Queen, to give it the name Virginia.

BARLOW, FRANCIS CHANNING: military officer: 1834, Oct. 19—1896, Jan. 11: b. Brooklyn, N. Y. He graduated at Harvard 1855, and studied in the law office of William Curtis Noyes, in New York. He was admitted to the bar and began practice, for a while also doing editorial work on the N. Y. *Tribune*. At the outbreak of the civil war he joined the 12th regt. national guards, S. N. Y., coming out of his 3 months' service as lieut. He again went to the front as lieut.col. 61st N. Y. vols.; was promoted col., and 1862, Sep. 19, brig.gen. for distinguished services at the battle of Fair Oaks. At Antietam B. was severely wounded and supposed to have been killed. He was again wounded at Gettysburg, but recovered and fought through the war. He was sec. of state of New York 1865–68, afterward U. S. marshal and atty-gen. 1872–3; then resumed practice of law in New York.

BARLOW, James William, Irish historian: b. 1826, Oct. 21. He was professor of modern history in Trinity College, Dublin, from 1861, and has published *Lectures on Mediæval Italy; The Normans in Italy; Eternal Punishment or Eternal Death; The Ultimatum of Pessimism.*

BARLOW, Jane, popular Irish novelist: b. Clontarf, Ireland, 1860, Oct. 17. The literary quality is a marked characteristic of all her writing. Her published works include *Bogland Studies*, verse (1892); *Irish Idylls* (1892); *Kerrigan's Quality* (1893); *The End of Elfintown* (1894); *The Battle of the Frogs and Mice* (1894); *Maureen's Fairing* (1895); *Strangers at Lisconnel* (1895); *Mrs. Martin's Company* (1896); *Creel of Irish Stories* (1897); *From the East Unto the West* (1898); *From the Land of the Shamrock* (1900); *Ghost-bereft and Other Stories* (1902); *The Founding of Fortunes* (1902); *By Beach and Bog-Land* (1905); *Irish People in Irish Places* (1909).

BARLOW, Joel: 1754-1812, Oct.; b. Reading, Conn. He studied at Yale Univ., and intended to enter the profession of law, but served as a military chaplain during the War of Independence. In 1787 he published a poem called *The Vision of Columbus*, which in 1805 appeared anew in enlarged form as *The Columbiad.* It abounds in beautiful passages, but is overburdened with political and philosophical disquisitions, and disfigured by singularities of expression. B. accepted a commission in 1788 to prosecute the sale of lands for the Ohio Company in England and France, where he signalized himself by zealous republicanism; published in 1792 in London a poem entitled *The Conspiracy of Kings*, and endeavored also to work upon the public mind in England by political pamphlets. In Autumn 1792 he was deputed by the London reformers, with whom he was associated, to proceed to Paris, where he received much attention. Thenceforward France was his home, except for six years after 1805, when he established himself near Washington, on the banks of the Potomac, where he built a splendid mansion, known as 'Kalorama,' the result of his wealth acquired in commercial pursuits in Paris. In 1792–3, while at Chambery, in Switzerland, he wrote his famous poem *Hasty Pudding*, in several cantos. This, and his version of the 37th Psalm in his edition of *Watts' Hymns*, have best preserved his literary memory. His political services were signal in contributing twice to preserve peace between his native country and France, 1800 and 1811; also in forming a treaty with Algiers that secured the liberation of more than one hundred American prisoners. In France, he received the rights of French citizenship. He spent some years on the continent of Europe in political, literary, and mercantile pursuits, and was for a short time American consul at Algiers. He returned to America 1805, and was appointed minister to France 1811. He died at Zarnawiczc, near Cracow, on his way to a conference with the Emperor Napoleon at Wilna.

BARM, n. *bârm* [AS. *bearm;* Ger. *berm;* Dan. *bærme*, the dregs of oil, wine, or beer]; the scum or slimy substance from beer, which consists of yeast; yeast; leaven for bread. BARMY, a. *bâr′mĭ*, containing yeast (q.v.).

BARM, n. *bârm* [AS. *beram*, the bosom: Icel. *barmr:* Goth. *barms*]: in *OE.*, the bosom; the lap.

BARMECIDES, or BARMACIDES, *bâr′me-sīdz*, or BAR′-MEKIDES: Persian family, distinguished among the most powerful in the province of Khorasan, the cradle of the greatness of the Abbaside caliphs, whose cause the *children of Barmek* espoused. KHALED-BEN-BARMEK, the first of these whose authentic history has reached us, was the prime-minister of Abul Abbas Al-Saffah, the first Abbaside caliph; and his influence enduring through the reigns of Al-Mansur and Mohdi, the latter entrusted him with the education of his son, the celebrated Harun Al-Raschid. YAHYA, the son of Khaled, was made vizier by Harun upon his accession to the caliphate (A.D. 786), and both by his military skill and civil administration, contributed largely to the prosperity of the reign—the caliph himself bestowing on him the appellation of Father.

BAR′MECIDE'S FEAST: a phrase originating probably in the story of the barber's sixth brother, in the *Arabian Nights.* The substance of the story is as follows: One Schacabac being in great want, and not having tasted food for two days, ventured to visit a rich Barmecide noted both for his hospitality and eccentric humor, in the hope of generous entertainment. The Barmecide, on learning his condition, invited him to dinner. Schacabac was presented with an empty plate, requested to 'make himself at home,' and by and by, asked 'how he liked his rice-soup.' It was apparently a cruel jest to play off on a starving man. Schacabac, nevertheless, feigned to enter into the humor of his host, and expressed his conviction that the rice-soup was delicious. The Barmecide continuing the imposition, next asked his victim if he ever saw whiter bread. Poor Schacabac, who saw neither bread nor meat, nor indeed anything eatable, made a prodigious effort to look happy; he even went the length of gently remonstrating with his host for not supposing him completely satisfied. In this way a magnificent but fictitious dinner was disposed of. When wine, however, was produced, Schacabac pretended only to taste it on the ground that he was 'quarrelsome in his liquor,' and might do his host an injury. The Barmecide forced him, however, and at last Schacabac, in an excusable rage at being so elaborately tantalized, feigned to have forgotten himself, and gave the eccentric old gentleman 'a good box on the ear.' This put a stop to the joke. The Barmecide was pleased with the patient humor of his guest, and a visible dinner was immediately ordered.

BARMEN, *bâr′mėn:* a most charming valley, about two leagues in length, on the Wupper; about two leagues from Elberfeld, in the province of Rhenish Prussia. It is

divided into Upper and Lower B., and contains five towns or villages, which united form the town of B., now continuous with Elberfeld. Nowhere in Germany is so much manufacturing industry accumulated in a single spot. B. is the principal seat of the ribbon-manufacture on the continent. Its fabrics go to all parts of the world. It produces linen, woolen, cotton, silk, and half-silk ribbons, cloth of various kinds, stay-laces, thread, etc. It has also considerable manufactures of soap, candles, metal-wares, buttons, machinery, and pianofortes. There are, besides, in the valley, numerous bleach-fields and Turkey-red dye-works. Lower B. has a mineral spring and a bathing establishment. Pop. of B. (1900) 142,000.

BARN, n. *bârn* [AS. *berern*—from *bere*, barley; *ern*, a place: Dut. *berm*, a heap: Dan. *baarm*, a load]: a covered building for farm produce. BARN-DOOR FOWL, a dung-hill cock or hen. BARN-OWL: see OWL.

BAR'NABAS, SAINT: properly JOSES: mentioned in the Acts of the Apostles as a fellow-laborer of the apostle Paul, and even honored with the title of apostle. He is also supposed to have founded the first Christian community at Antioch. According to tradition he became the first Bp. of Milan; but he is differently reported to have died a natural death, and to have suffered martyrdom at the hands of the Cypriot Jews, 61. The Epistle ascribed to him is of very doubtful authenticity.

BARNABITES, *bâr'na-bīts:* an order of monks which sprang up at Milan, 1530; so called because the church of St. Barnabas in that city was granted them to preach in. They were approved by Pope Clement VII. and Pope Paul III. Their special duties were, to attend the sick, to preach, to instruct the young, and to take the charge of souls. They soon established themselves in Italy, France, Austria, and Spain, and enjoyed the privilege of teaching theology in the schools of Milan and Pavia. Many eminent men have been sent forth by them. Besides the three usual monastic vows, they took a fourth, viz., not to sue for church preferments. In France and Austria, they were employed in the conversion of Protestants; but they have now, as a body, almost fallen into oblivion. Only a few monasteries remain here and there in Italy and Austria.

BARNACLE, n. *bâr'nă-kl*, or BER'NICLE [F. *barnache;* Gael. *bairneach;* Manx. *barnagh*, a limpet, conical-shaped: Sp. *bernicla*, a bird like a goose: properly AS. *bearn*, a child; *aac*, oak—expressive of the old belief that the barnacle, externally resembling an acorn, grew on oak trees]: (*Lepas*, also called *Anatifa* and *Pentalasmis*): a conical shell-fish, or rather crustacean, a genus of *Cirripedia* (q.v.); type of a family of articulate animals distinguished by a long flexible stalk or peduncle, which is provided with muscles, upon the summit of which, in the true B., are shelly valves, five in number, enclosing the principal organs of the animal, and opening and closing on one side

like the opercular valves of *Balanus* (q.v.), to admit of its spreading out and retracting its net—an apparatus similar to that by which the animals of that genus obtain their food. Barnacles abound in almost all seas, attaching themselves in great numbers to logs of wood, ships' bottoms, etc. They grow very rapidly. Some of the species are eaten in some parts of the world, and perhaps they were among the *balani* which the ancient Romans esteemed a delicacy.—In some *cirrhophods*, very nearly allied to the true barnacles, and resembling them in general form, the shelly valves almost entirely disappear. While the sexes are generally united in the same individual, in the genera *Ibla* and *Scalpellum*, besides the normal hermaphroditic form, there are females, and also males called 'complementary males,' which are attached parasitically both to the females and the hermaphroditic forms, living just within the valves or fastened to the membranes of the body. These complemental males are degraded, imperfect forms, with sometimes no mouth or digestive canal. The apparent design in nature of their different sexual forms is to effect cross-fertilization.

In former times, the B. was supposed to be the embryo of a goose or bird of some kind; a notion which doubtless arose from a fancied resemblance between the convolutions of the fish in its shell and the embryo of a bird in the egg. It was, therefore, believed that the barnacle goose, described in next article, sprang from these marine shells. Hollinshed gravely affirms that such was the case; and the most learned men of their time were weak enough to give credence to the absurdity. See CIRRHOPODA.

BAR'NACLE GOOSE, or BER'NICLE GOOSE: often also called BARNACLE, or BERNICLE (*Anser Bernicla* or *leucopsis*): the bird which the fables of former days represented as deriving its origin from the cirrhopod of which it bears the name. See BARNACLE. It is smaller than the common wild goose, being only a little more than 2 ft. long, and about 5 lbs. in weight. It is very prettily marked, having the forehead, cheeks, and throat white, the bill black, and a black stripe extending from it to the eye; the crown of the head, neck, and upper part of the breast black; the rest of the plumage on the upper parts of the body chiefly ash-gray and black, in undulating bars—on the lower parts, white. It is a common winter visitant of the w. coasts of Britain and of Ireland, but in the e. parts of Britain it is rare. It retires in spring to more northern regions, where it breeds, vast numbers passing n. along the coast of Norway to the Arctic Ocean. It is highly esteemed for the table.

Formerly, but not now, the Barnacle Goose and the Brant were regarded as two species—the former named *B. leucopsis*, referring to much white on the head, and the latter *B. bernicla*. But the color varies much. The 'Brant Goose' was supposed to be smaller than the B. G., being only about 21 inches in length. It is also of much

darker plumage, the whole head, throat, and neck being black, except a small patch on each side of the neck, which is white, mixed with a few regularly placed black feathers; the upper parts of the body generally almost black, and the lower parts slate gray, except the vent and under tail-coverts, which are white. It is remarkable for length of wing, and powerful flight, and for its distant migrations. It is very common in winter on the British shores, but breeds in high n. latitudes. It is a winter-bird of passage in the United States and Canada, as in Britain and on the continent of Europe. The Common Wild Goose of N. Amer. is *Branta Canadensis.*

Very nearly allied to these species is the Red-breasted Goose, or Red-breasted Barnacle (*Anser ruficollis*), a beautiful bird, of which the neck and upper part of the breast are of a rich chesnut red. In size, it resembles the Brent Goose; it is a very rare visitant of Britain and of the continent of Europe, and is abundant only in extreme n. Asia. —Another species, called Hutchins' Goose, or Barnacle (*A. Hutchinsii*), of dark plumage, and with a triangular patch of white on each side of the head and neck, is abundant in Hudson's Bay, and extreme N. America.

These species are regarded by some naturalists as constituting a genus *Bernicla*, distinguished chiefly by a shorter and more slender bill from the ordinary or true geese.

The Egyptian Goose or Bargander (*Anser Egyptiacus*) is sometimes ranked with these, sometimes made the type a distinct genus, *Chenalopex*, upon account of the longer bill, a short spur with which the bend of the wing is armed, and the anatomical peculiarity of a hollow bony enlargement at the bottom of the trachea of the male. It is a little smaller than a common goose; its voice more resembles that of a wild-duck. The prevailing color of the plumage is light chestnut brown, minutely rayed with darker lines; the neck and part of the wings are white. Large chestnut patches surround the eyes. It has long been kept in parks and pleasure grounds, chiefly on account of the beauty of its plumage, and has become partially naturalized. It is very abundant on the Nile, and is frequently figured in Egyptian sculptures. It is much esteemed for the table, and was kept and fattened for it by the ancient Egyptians. It is the *Chenalopex* of Herodotus.

BARNACLES, n. plu. *bâr'nă-klz* [prov. F. *berniques;* OF. *bericles*, spectacles—from L. *beryllus*, crystal: perhaps only a corruption of *binocles*, double eyes]: spectacles; irons put on the noses of horses to make them stand quiet; B. in *heraldry*, similar to what are now called twitchers (resembling the original spectacles that clasped the nose), were instruments used by farriers to curb and control unruly horses; they are frequently introduced into coats of arms as a charge.

BARNADESIA, n. *bâr-na-dē'zĭ-a* [after *Michael Barnadez*, a Sp. botanist]: genus of composite plants, the typical

one of the family *Barnadesiæ*. The species are spiny bushes with entire leaves and pink florets.

BARNARD, *bâr'nêrd*, CHARLES: author: b. Boston, 1838, Feb. 13. He received a common-school education, began studying for the ministry, abandoned it for journalism, and became asst. editor of the Boston *Journal of Commerce*, musical editor of the Boston *Post*, and head of the *World's Work Department* in the *Century Magazine*. He has composed a number of amateur operas and dramas, including: *The Triple Wedding; Too Soon; Eugenea; The Dreamland Tree;* and *Katy Neal;* taken part in the authorship of the play *We, Us, and Co.;* and contributed more than 150 short stories and sketches to the periodicals. His principal books are: *My Ten-Rod Farm; Farming by Inches; The Strawberry Garden; A Simple Flower Garden; The Tone Masters* (3 vols. 1871); *The Soprano* (1872); *Legilda Romanief* (1880); *Knights of To-day* (1881); *Co-operation as a Business* (1881); *A Dead Town* (1884); *Talks about the Weather* (1885); *Talks about the Soil* (1886); *Talks about Our Useful Plants* (1886); and *Graphic Methods in Teaching* (1889).

BARNARD, DANIEL DEWEY, LL.D.: lawyer and politician: 1797, July 16—1861, Apr. 24; b. Sheffield, Mass. He graduated at Williams Coll. 1818; practiced law at Rochester, N. Y., from 1821, was a member of congress 1828-30, 1839–45, and U. S. minister to Prussia 1849–53.

BARNARD, EDWARD EMERSON, SC.D.: astronomer: 1857, Dec. 16————: b. Nashville, Tenn. While he was a photographer's assistant in Nashville, he was interested in astronomy; succeeded in purchasing a 5-inch telescope, and discovered two new comets (1881–2). In 1883 he was called to Vanderbilt Univ. as an assistant, with care of the astronomical observatory, at the same time pursuing college studies, and graduating 1887. While there he discovered more comets, and won five of the $200 Warner prizes for these successes. On the completion of the Lick Observatory, he was called thither. He is the first observer of 16 comets, and of numerous nebulæ. In 1892 he discovered the fifth satellite of Jupiter, and in the same year received the Lalande gold medal from the French Academy of Sciences. He became Prof. of Astronomy at Chicago University and Director of the Yerkes Observatory 1895.

BAR'NARD, FREDERICK AUGUSTUS PORTER, S.T.D., LL.D., L.H.D., D.C.L., PH.D.: 1809, May 5—1889, Apr. 27; b. Sheffield, Mass.: educator. He graduated at Yale 1828; was tutor there 1829; taught in the American Asylum for the Deaf and Dumb at Hartford 1831, and in the New York Deaf and Dumb Institution 1832; was prof. of mathematics, natural philosophy, and chemistry in the Univ. of Ala. 1837–54; took orders in the Prot. Episc. Church 1856; was prof. of mathematics and astronomy, pres., and chancellor of the Univ. of Miss. 1856–61; was in charge of the printing and lithograph-

ing dept. of the U. S. Coast Survey 1861–64; and was pres. of Columbia College from 1864 till his resignation on account of ill health 1888, May 7. In 1860 he was pres. of the American Assoc. for the Advancement of Science, and a member of the expedition to observe the sun's eclipse in Labrador; 1862 he continued the reduction of the observations of the stars in the s. hemisphere begun by Gilliss; 1865 he was pres. of the board of experts of the American Bureau of Mines; 1867 was a U. S. commissioner to the Paris Exposition, and reported on *Machinery and Industrial Arts* (1869); 1872 pres. of the American Institute; 1873 till his death pres. of the American Metrological Soc.; 1874–80 foreign sec. of the National Acad. of Sciences, of which he was an original incorporator; and 1878 U. S. asst. commissioner-gen. to the Paris Exposition. He was editor-in-chief of *Johnson's Cyclopædia*, and a constant contributor to the *American Journal of Education* and the *American Journal of Science;* and, besides numerous papers in scientific literature, published: *Treatise on Arithmetic* (1830); *Analytic Grammar, with Symbolic Illustrations* (1836); *Art Culture* (1854); *Letters on Collegiate Government* (1855); *History of the U. S. Coast Survey* (1857); *University Education* (1858); *Undulatory Theory of Light* (1862); *Recent Progress in Science* (1869); *The Metric System* (1871, 3d ed. 1879); *Imaginary Metrological System of the Great Pyramid of Gizeh* (1884). His entire estate was bequeathed to Columbia College.

BAR'NARD, HENRY, LL.D.: educator: b. Hartford, 1811, Jan. 24. He graduated at Yale College 1830, was admitted to the bar 1835, and began his educational work while a member of the Conn. legislature 1837–40. He was sec. of the board of school commissioners of Conn. 1838–42; school commissioner of R. I. 1843–49; supt. of the Conn. state schools 1850–54; pres. of the State Univ. of Wis. 1857–59; pres. of St. John's College, Annapolis, Md., 1865–6; and U. S. commissioner of education 1867–70. While sec. of the Conn. board, he published the *Connecticut Common School Journal*, and, while R. I. commissioner, the *Rhode Island School Journal.* In 1855 he began publishing the *American Journal of Education*, and still (1890) publishes it. Since 1873 he has been engaged in preparing a collected edition of his works in 52 vols., to be entitled *The American Library of Schools and Education.* His published works include: *School Architecture* (1839); *National Education* (1840); *Practical Illustrations of School Architecture; Report on Public Schools in Rhode Island* (1845,48); *Documentary History of Public Schools in Providence; Education and Employment of Children in Factories; Normal Schools and Teachers' Institutes* (1850); *National Education in Europe* (1854); *Normal Schools in the United States and Europe; History of Education in Connecticut from* 1638 *to* 1854; *Educational Biography* (1857); *Elementary and Secondary Instruction in Switzerland, France, Belgium, etc.; English Pedagogy; French Teachers, Schools,*

and Pedagogy; German Teachers and Educational Reformers; Object-Teaching and Oral Lessons on Social Science and Common Things (1861); *Pestalozzi and Pestalozzianism* (1861); *Primary Schools and Elementary Instruction; School Codes; Science and Art; and Superior Instruction in Different Countries.* D. 1900, July 5.

BAR'NARD, JOHN: clergyman: 1681, Nov. 6—1770, Jan. 24; b. Boston. He graduated from Harvard College 1704, studied theology, was chaplain to the Port Royal expedition, was offered a chaplaincy in England, but declined to subscribe to the 39 articles, and from 1716 till his death was settled at Marblehead, Mass. He published sermons, and *A Version of the Psalms.*

BAR'NARD, JOHN GROSS, LL.D.: 1815, May 19—1882, May 14; b. Sheffield, Mass. He graduated from West Point, 1833, for many years was an engineer in the Gulf states, and was brevetted major for meretorious services in the war with Mexico. In 1850 he was chief of the force which made the first thorough survey of the isthmus of Tehuantepec, and two years later made surveys for improvement of the mouths of the Mississippi river. He managed the building of fortifications at San Francisco 1854, and was supt. of West Point Acad. 1855–6. At the opening of the civil war he was made chief engineer at Washington, held the same position in various campaigns in Va., directed the engineering operations of the siege of Yorktown, was a member of Gen. Grant's staff, and was brevetted maj.gen. vols. and maj.gen. U. S. army for distinguished services. He was afterward a member of the govt. light-house board, and retired 1881. He was a member of scientific societies, published numerous scientific papers, and several books.

BARNARD COLLEGE: a part of Columbia University, New York; organized 1889 and named in honor of Frederick A. P. Barnard, through whose efforts its establishment was largely due. It was designed for the education of young women by instructors from Columbia Univ. At the end of 1909 it reported 65 instructors and 664 students. In 1900, Jan., the college was formally incorporated into the general system of Columbia Univ. The endowment up to March, 1903, was $250,000. During that month another $500,000 was added, John D. Rockefeller giving $250,000. Mrs Elizabeth Milbank Andrews also gave in March, 1903, $1,000,000 to the college.

BARNATO, *bâr-nâ'to,* BARNEY (properly BARNETT ISAACS): English speculator in S. Africa: b. London, of Jewish parents. At the age of 20 he went to S. Africa as showman; became a diamond broker, then owner of diamond mines; early invested in Transvaal gold fields, and acquired a fortune estimated at $100,000,000. Crazed by heavy losses he committed suicide by leaping from a steamer near Madeira, 1897, June 14.

BARNAVE, *bâr-nâv',* ANTOINE-PIERRE-JOSEPH-MARIE: 1761–93, Nov. 29; b. Grenoble, France; son of an advocate. He adopted his father's profession, and early gained repute

for ability in the parliament of Grenoble. He was chosen deputy from his province to the states-general 1789. He zealously advocated the proclamation of the Rights of Man, was vehement in opposition to the Absolute Veto, carried through the confiscation of church property to the use of the nation, the emancipation of the Jews, and the abolition of the religious orders, and was mainly instrumental in the liberation of the slaves and reorganization of the colonies. As a leader of the extreme party in the earlier stages of the revolution, he became the idol of the people, particularly after his victory over Mirabeau, in the question of the power of peace and war, which Mirabeau wished to remain with the king, and B. successfully claimed for the national assembly. His change to a more moderate course, defending the inviolability of the king's person, and resisting the assertion by the assembly of power to remove ministers, led to his being regarded as a renegade from the national party, and to his being fiercely assailed by the daily press. He retired to his native place on the dissolution of the national assembly; but was impeached, with Lameth and Duport-Dutertre, on account of correspondence with the court; was brought to Paris, tried before the Revolutionary Tribunal, condemned, and guillotined.

BARN'BURNERS: derisive name applied to a section of the democrats of N. Y. who opposed the annexation of Texas, the extension of slavery, the increasing of the state debt for building canals, and the granting of special privileges to corporations. With the free-soil party, the B. voted for Martin Van Buren for pres. 1848. The name came from a story of a farmer who burned his barn to drive out the rats that were eating his grain.

BARNEGAT, *bâr-nē-găt'*, BAY: bay in Ocean co., N. J.; about 23 m. long; connected with the Atlantic Ocean by B. inlet, which is a mile wide. On the s. side of this inlet is a light-house 150 ft. high, with a white flash-light. Island Beach and Squan Beach lie between the bay and the ocean.—The village of BARNEGAT is in Union tp., Ocean co., N. J.; on the Tuckerton railroad, one m. from B. Bay. Pop. about 1,000.

BARNES, *bârnz*, ALBERT: 1798–1870, b. Rome, N. Y.: minister of First Presb. Church, Philadelphia, 1830–67. He was one of the leaders in what was known as the New School in the Presb. Church; and was distinguished for his careful thought, his spiritual earnestness, and his meekness under sharp accusation of heresy. His *Notes* on various parts of the Old and New Testaments, specially adapted for the use of Sunday-schools and Bible classes, had an immense circulation. Two editions of 18 vols. were published in England, 1860–62.

BARNES, ALFRED SMITH: 1817, Jan. 28—1888, Feb. 17; b. New Haven: publisher. He removed to Hartford 1827, learned the book-selling business there, and when 21 years old formed a partnership with Prof. Charles Davies, for the publication of the latter's mathematical text books and of Mrs. Emma Willard's histories, under

the firm-name of A. S. Barnes & Co. He personally canvassed a large tract of country for the sale of these books, and his intercourse with teachers induced him to make a specialty of publishing educational text-books. In 1840 the firm removed to Philadelphia, and 1845 to New York. B. retired from active management 1880, leaving five sons and a nephew in charge. He was pres. of the Brooklyn City Mission Soc., one of the managers of the Amer. Home Missionary Soc. (Congl.), and a director in numerous financial institutions; gave the Brooklyn Faith Home $25,000, and the Y. M. C. A. of Cornell Univ. $40,000 for their building; and bequeathed $50,000 to various objects.

BARNES, Charles Reid, American botanist: b. Madison, Ind., 1858, Sept. 7. He was educated at Hanover (Ind.) College, 1877, and pursued graduate studies at Harvard. He held professorships in Purdue University and the University of Wisconsin, 1880–98, and since 1898 has been professor of plant physiology in the University of Chicago. He is the author of *Outlines of Plant Life* (1900); joint author of *Plant Dissection;* and *Keys to the Genera and Species of North American Mosses* (1890). He has contributed many papers to the *Botanical Gazette* of which he has been an editor since 1883.

BARNES, James, American author: b. Annapolis, Md., 1866, Sept. 19. He was graduated from Princeton University in 1891, and has been connected in an editorial capacity with *Scribner's Magazine* and *Harpers' Weekly.* During the Boer war he acted as a correspondent in the field for the *Outlook.* His books are: *Naval Actions of 1812; For King or Country; Yankee Ships and Yankee Sailors; A Loyal Traitor; The Hero of Erie* (1898); *A Princetonian; David G. Farragut* (1899); *Drake and His Yeomen* (1899); *Great War Trek with the British Army on the Veldt* (1901); *With the Flag in the Channel* (1902); *The Grant of Three Wars* (1903); *The Unpardonable War* (1904); *The Son of Light-Horse Harry* (1904); *The Blockaders* (1905); etc.

BARNES, Joseph K., M.D.: surgeon-gen. U. S. A.: 1817, July 21—1883, Apr. 5; b. Philadelphia. He graduated in medicine at the Univ. of Penn. 1838, and after 2 years of private practice was commissioned assist. surgeon in the army, with assignment to duty at the U. S. Milit. Acad. After a few months he was detailed for service in Gen. Harney's expedition against the Seminoles in Fla., 1840–42; then served at Ft. Jessup, La., 1842–46. He was chief med. officer of a cavalry brigade throughout the Mexican war. He was in Oregon at the opening of the civil war, and in the spring of 1861 was assigned to duty in the office of the surgeon-gen. of the army at Washington; was appointed med. inspector with rank of col. 1863, and became surgeon-gen. with rank of brig.gen. the same year; he received the brevet rank of maj.gen.

1865. B. originated the valuable army med. museum and library.

BARNES, MARY (SHELDON): educator: b. New York, 1850, Sept. 15. Having graduated at the N. Y. state normal school at Oswego, and at the Univ. of Mich., she gave three years to study in Europe, passing one year at Zurich, and one at Cambridge, Eng., under the preceptorship of Prof. John R. Seeley, prof. of mod. hist. in Cambridge Univ.; after her return she was for 3 years prof. of hist. in Wellesley College. She was appointed, 1892, assist. prof. of mod. hist. in the Leland Stanford, Jr., Univ., Palo Alto, Cal. She has published *Sheldon's Studies in General History* (2 vols.), and *Sheldon-Barnes's Studies in American History* (2 vols.).

BARNET, *bâr'nĕt*, CHIP'PING: a town in the s. of Hertfordshire, on a hill-top, 11 m. n.n.w. of London; formerly a place of importance on the great northern coach-road. Large cattle-fairs are held here. Here, 1471, was fought the famous battle of B., between the Yorkists and Lancastrians, in which the latter, after a desperate struggle, were routed, and their leader, Warwick, 'the king-maker,' killed, by which event Edward IV. was firmly established on the throne. A commemorative obelisk is now erected near the spot. Pop. 7,876.

BARNEVELDT, *bâr'nĕh-vĕlt*, JAN VAN OLDEN, Grand Pensionary of Holland: 1547-1619, May 13. He early showed great ardor in the cause of the independence of his country. As advocate-general of the province of Holland, he proved equally his insight into affairs and his address in diplomacy. Penetrating the secret designs of Prince Maurice (q.v.) of Orange, he became the head of the repubcan party, which aimed at subordinating the stadtholder to the legislature. It was he also who opposed the warlike tendencies of Maurice, concluded (1609) a truce with Spain, and prevented the states-general from taking part in the revolt of the Bohemians. His influence excited the House of Nassau to still greater jealousy, which in the religious controversies between the Remonstrants (see ARMINIUS) and Gomarists swelled into the bitterest hostility. With the view of obviating a civil war, B. proposed an ecclesiastical assembly, which resulted in agreeing to a general toleration on the disputed points. The states at first concurred in this wise measure; but the intrigues of the Orange party brought about a change of views, by representing the Remonstrants as secret friends of Spain. B., who sympathized with the more tolerant principles of that party, was attacked in scurrilous publications, and was insulted even in the meeting of the states by the mob, with whom Maurice was an idol. The strife between the Remonstrants and Gomarists threatened to end in civil war. B. was illegally arrested, 1618, Aug. 29, with Grotius and Hoogerbeets, and thrown into prison. In Nov. following, Maurice procured the summoning of the Synod of Dort

(q.v.), which condemned the Remonstrants with the utmost rigor and injustice. In 1619, March, while the Synod was still sitting, B. was brought to trial before a special commission of 24 judges, who condemned as a traitor the innocent man to whom his country owed its political existence. It was in vain that his friends and relations raised their voice; equally vain was the interference of the Dowager Princess of Orange and of the French ambassador; Maurice was not to be moved; and the venerable man of 71 years of age mounted the scaffold and laid down his head with the same firmness that he had shown through all his life. His sons, Willem and René, were at the same time dismissed from office. Four years after their father's death they took part in a conspiracy against the life of the prince, which was discovered. Willem escaped to Antwerp, but René was seized and beheaded.—See Motley's *Life of B.* (2 vols. London 1874).

BARNEY, *bâr'nĭ*, JOSHUA: naval officer; 1759, July 6—1848, Dec. 1; b. Baltimore. He went to sea as a boy, and was forced into the service of the king of Spain. In 1775 he was appointed master's mate of the U. S. sloop *Hornet*, was promoted lieut. 1776, and attached to the sloop *Sachem*, and afterward to the *Andrea Doria*, and was taken prisoner while in charge of a prize, but exchanged 8 months later. While in command of the *Saratoga*, he was captured and carried to Plymouth, England, but escaped 1782. He was now given the command of the *Hyder Ali*, and captured the British ship *General Monk*, which was renamed the *General Washington*, and placed under B.'s command. Accompanying Monroe to Paris 1794, he entered the French naval service, was commissioned capt., and put in command of a squadron. He resigned, and came home 1800. During the war of 1812, he served with distinction, particularly at the battle of Bladensburg, where he was wounded and taken prisoner, but soon exchanged. In 1817 he was appointed naval officer at Baltimore. He died in Pittsburgh, Pennsylvania.

BARNFIELD, RICHARD, English poet: b. Norbury, Shropshire, 1574; d. 1627. His lyrics, *As It Fell Upon a Day* and *If Music and Sweet Poetry Agree*, were long ascribed to Shakespeare and were included in *The Passionate Pilgrim* (1599). Barnfield's works include: *The Affectionate Shepherd* (1594); *Cynthia, with Certain Sonnets and the Legend of Cassandra* (1595); *The Encomion of Lady Pecunia* (1598).

BARNHARDTITE, n. *bârn-hard'īt* [after *Barnhardt's Land*, in N. C., where it is found]: a mineral, classified by Dana under his Pyrite group. Composition: Sulphur, 30.5; copper, 48.2; iron, 21.3; hardness, 3.5; sp. gr. 4.321. Lustre, metallic; color, bronze yellow.

BARNI, *bär-nē*, JULES ROMAIN, French scholar and critic: b. Lille, 1818, June 1; d. Mers, 1878, July 4. His

efforts to propagate the Kantian philosophy through the medium of *Observations on the Sense of the Sublime and Beautiful* (1836); *Foundations of Ethical Metaphysic* (1848), and *Kantian Philosophy* (1850), earned him distinction; as did also, in another, but contiguous field, a *History of Moral and Political Ideas in France in the Eighteenth Century* (1866).

BARNSLEY, *bârnz'lē:* town in the West Riding of Yorkshire, 39 m. s.w. of York; on a hill. It has coal and iron mines, linen manufactures, bleaching and dye works, manufactures of iron and steel, wire-works and glass-works. Besides ample railway communication, it has two canals. B. has many educational and benevolent institutions, and a public park of 20 acres. Chief buildings are the county court and bank. Pop. (1901) 41,000.

BARNSTABLE, *bârn'stā'bl:* cap. of the co. of B., Mass.; 65 m. s.e. of Boston. The inhabitants are engaged chiefly in fisheries, in the coast trade, and in farming. B. has a fine courthouse, several churches, a high school, and other schools, weekly papers, and a custom-house. The southern portion of the town is largely frequented as a summer resort. Pop. (1910) 4.676.

BARNSTAPLE, *bârn'sta-pl:* town in n.w. Devonshire, on the right bank of the Taw, 6 m. from its mouth, 34 n.w. of Exeter. The Taw is here crossed by an ancient bridge of 16 arches, which has been widened by iron-work on each side. In consequence of the river and harbor having become filled up with sand, much of the trade of B. has been transferred to Bideford. Its manufactures are pottery and lace. It sends two members to parliament. B. has existed since the reign of Athelstan, who built a castle here. The poet Gay was born near the town, and educated at its grammar-school. Pop. 14,000.

BARNUM, *bâr'nŭm,* Frances Courtenay (Baylor), American novelist: b. Fayetteville, Ark., 1848. She has written *On Both Sides,* an international novel (1886); *Behind the Blue Ridge; Juan and Juanita,* a story for boys and girls; *Claudia Hyde* (1894); *The Ladder of Fortune* (1899); *A Georgian Bungalow; Nina Barrow; Featherlings of Ferneyhaugh;* etc. She has also been a frequent contributor to magazines, and a writer of short stories.

BARNUM, Henry A.: soldier: 1833, Sep. 24—1892, Jan. 29; b. Jamesville, N. Y. After studying at Syracuse, N. Y., he was a tutor in the Syracuse Institute 1856; studied law and was admitted to practice. In 1861 he was elected capt. 12th regt., N. Y. S. vols., served through the war, was wounded and left for dead on the field at Malvern Hill—a body supposed to be his being afterward found, and buried with funeral oration. But he was a captive in Libby prison. He was with Sherman in the march to the sea, commanding a brigade. He was several times wounded, was repeatedly promoted for gallantry, and was brevetted maj.gen. 1865, Mar. 13. After

the war he was inspector of prisons, deputy tax commissioner, and harbor-master of New York, and, 1885, a member of the state legislature.

BARNUM, Phineas Taylor: showman: 1810, July 5—1891, Apr. 7; b. Bethel, Conn. He was son of a country storekeeper, who died poor, and the boy earned his living in various lines of business, and in different towns, until 1828, when he settled in Bethel, opened a store, and married. He was unsuccessful, and established a weekly newspaper with no better fortune; and he removed to New York 1834, and entered the show business with one attraction, Joyce Heth, a colored woman, announced as the nurse of George Washington, and 161 years old. The exhibition was very successful; and after Joyce Heth died, a year later, B. purchased Scudder's American Museum, changed its name to 'Barnum's,' and soon began to accumulate money. He engaged the dwarf, Charles S. Stratton ('Gen. Tom Thumb') 1842, and exhibited him successfully in the United States and Europe. In 1849 he made a contract with Jenny Lind for a concert tour of 100 nights in America at $1,000 a night. He gave only 95 concerts, but made an enormous profit from this speculation and from many others, and retired temporarily, 1855, to live in his oriental villa, 'Iranistan,' in Bridgeport, Conn.; and expended large sums in improving and beautifying that town. Having endorsed notes to the amount of about $1,000,000 for a manufacturing company which failed, he was financially ruined; and went to England with Tom Thumb 1856 to retrieve his fortunes. Soon he was again successfully conducting his museum in New York; but it was burned 1865, July 13, as was another which he opened afterward. In 1871 he organized his great travelling circus and menagerie, with which he was remarkably successful. B.—who as showman was first despised, then ridiculed, then tolerated, and lastly for many years abundantly welcomed—grew into high popular esteem for his numerous charities and public spirit; and was several times elected to the Conn. legislature, besides being mayor of Bridgeport. He was an earnest advocate of temperance, frequently lecturing on that subject. He wrote his *Autobiography* (Hartford 1869); also *Humbugs of the World* (New York 1865); and a story, *Lion Jack* (1876).

BARNUM, William H.: manufacturer and politician: 1818, Sep. 19—1889, Apr. 30; b. Boston Corners, N. Y., near the Conn. boundary. He received his education in the public schools, and when only 18 years of age entered into business and manufactured car-wheels. He afterward engaged in the iron manufacture at Lime Rock, Conn., and accumulated a large fortune. In 1852 he was elected to the Conn. legislature; was a member of congress 1866–76; and 1876 was elected to the U. S. senate for an unexpired term. He was chairman of the national democratic committee 1880 and 84.

BARNWELL, *bârn'wĕl,* John: soldier: abt. 1671–1724;

b. Ireland. He emigrated to Beaufort, S. C., where he founded one of the best known southern families. He was distinguished by prowess in the conflicts of the early colonists with the Tuscaroras, a tribe of Indians who held 15 towns on the Tar and Neuse rivers in N. C., whence they made frequent attacks on the coast settlements. B. defeated them 1712, killing or capturing as many as 1,000, and driving them out of that country, for which feat he received the sobriquet 'Tuscarora John.'

BARN'WELL, ROBERT: soldier: 1762–1814; b. Beaufort, S. C.,; grandson of John B. He volunteered to serve in the revolutionary war when only 16 years of age; and fought at Port Royal, where he was wounded, captured, and confined in a prison ship. He formed a bold plan with the other prisoners, and was successful in overpowering his jailers, seized the ship, and escaped. B. was a member of the state legislature, and was in congress 1791–2.

BAROACH, *bâ-rōch'*, BROACH, or BHARUCH: large town of British India, province of Bombay; on the n. bank of the Nerbudda, here a river two m. wide even at ebb-tide, but shallow, and the navigable channel winding and difficult even at high water. B. is a very ancient town, supposed to be the *Barygaza* of Arrian. It is in a most fertile district, and was formerly very flourishing, with a large population; but in consequence of political troubles it fell into decay. It has of late begun to recover prosperity, and its commerce is increasing. B. belonged to the Mussulman kingdom of Guzerat, on the overthrow of which by the Emperor Akbar, it was assigned to a petty nawab; and falling under the dominion of the Peishwa, was taken by the British 1772, ceded to Scindiah, 1783, in acknowledgment of the kind treatment of some British prisoners; and again stormed by a British force 1803, since which date it has remained in the possession of the British. The heat at B. is often excessive, and the situation is regarded as unhealthful. B. has considerable trade with Bombay and Surat—principal exports, raw cotton, grain, and seeds. It was long famous for its manufactures of cloth; but that of the finer kinds has fallen off very much, in consequence of the importation of English goods. Many of the weavers of B. are Parsees, of whom also are some of the more opulent classes, such as ship owners and ship brokers. B. has a remarkable institution—a Brahmanical hospital for sick animals, into which horses, dogs, cats, monkeys, peacocks, and even insects are received. It is ostensibly attended by a number of Brahmans, who derive a good income from lands devoted to it, and from voluntary contributions. Pop. at present, within the walls, est. 15,000; pop. of collectorate 350,000.

BAROCHE, *bâ-rosh'*, PIERRE-JULES: 1802, Nov. 8—1870; b. Paris: eminent French politician. He passed as an advocate 1823, and distinguished himself by his talents as a pleader. In 1847 he was sent to the chamber of deputies as representative of Rochefort, took his position among the moderate reform party, and was one of those who signed the

accusation drawn up against the Guizot ministry. During the republic, he voted at first with the democratic party, but afterwards supported General Cavaignac, and after Dec. 10, the politics of Louis Napoleon. B. was now made procureur-général of the republic at the Paris appeal court. In 1850, March, he succeeded Ferdinand Barrot as minister of the interior, after which he became a decided Bonapartist. In 1851, April, he was appointed minister of foreign affairs, with Leon Faucher as colleague. After the *coup d'état* of 1851, Dec. 2, B. accepted the vice-presidency of the Consultative Commission, and was authorized to make known officially the result of the *plebiscitum*. He became minister of foreign affairs 1860, minister of justice and public worship 1863, and received the grand cross of the Legion of Honor 1855.

BAROCO, n. or BAROKO, *ba-rō'kō* [a word without etymological meaning, but designed to have the vowels symbolic]: in *logic*, the fourth Mode of the Second Figure of syllogisms. See SYLLOGISM and MOOD in logic.

BARODA, *bâ-rō'da:* city of Guzerat, cap. of the state of B.; 40 m. from Tunkaria, and 248 n. of Bombay, with which it is connected by railway. It stands on the Biswamintri, here crossed by a stone bridge of singular construction—an upper range of arches resting on a lower. B. is the residence of the Guicowar, a protected Mahratta prince; occupies an important position between the coast and the interior, and has considerable trade. In 1873, numerous complaints having been made to the British government about the misrule of the Guicowar, Malhar Rao, a commission was appointed to examine into the state of affairs, and as a result, the Guicowar was allowed 18 months in which to reform his administration. His misrule, however, continued, and a suspected attempt to poison Colonel Phayre, the British resident at his court, led to his arraignment before a mixed British and native tribunal 1875. The court was divided in opinion as to his guilt, but the British government deposed the Guicowar for his obvious misrule. Pop., city (1901), 103,790; state, 1,950,927.

BAROGRAPH, n. *băr'ō-grăf* [Gr. *baros*, weight; *grapho*, I write]: instrument which records variations of atmospheric pressure. To the lever of a counterpoised barometer is attached an arm carrying a pencil in contact with a sheet of paper, and moved by clockwork. Thus is produced a trace, with changes of form according to the variations of pressure. There are other forms of B. In one, a ray of light is directed on the upper part of the barometric tube, where it falls upon a moving ribbon of sensitized paper: the rise and fall of the mercury in the barometer causes the beam of light to be increased or diminished in width, and so shows the changes in the barometer by the continuous photographic record.

BAROLITE, n. *băr'ō-līt* [Gr. *barus*, heavy—from *baros*, weight; *lithos*, a stone]: a carbonate of barium—also called Witherite, from its discoverer.

BAROMETER, n. *bă-rŏm′ĕ-tėr* [Gr. *baros*, weight: *metron*, a measure:] an instrument which indicates the pressure and weight of the atmosphere, and is used to ascertain the heights of mountains, or to give warning of changes in the weather. BAROMETRIC, a. *băr′ō-mĕt′rĭk*, or BAR′OMET′RICAL, a. *-rĭ-kăl*. BAR′OMET′RICALLY, ad. *-kăl-ĭ*. BAROMETRY, n. *bă-rŏm′ĕ-trĭ*. ANEROID BAROM′ETER, *ăn′ėr-oyd* [Gr. *a*, without; *neros*, moist; *eidos*, a form]: a barometer which indicates the varying pressure of the atmosphere, not by the varying height of a column of a fluid, but by the compression and expansion of a small metal vessel. BAROMETROGRAPH, n. *băr-ŏ-mĕt′rŏ-grăf* [Gr. *baros*, weight; *metron*, a measure; *graphe*, a drawing, a delineation, a picture]: an instrument used for automatically inscribing on paper the variations of the barometer.

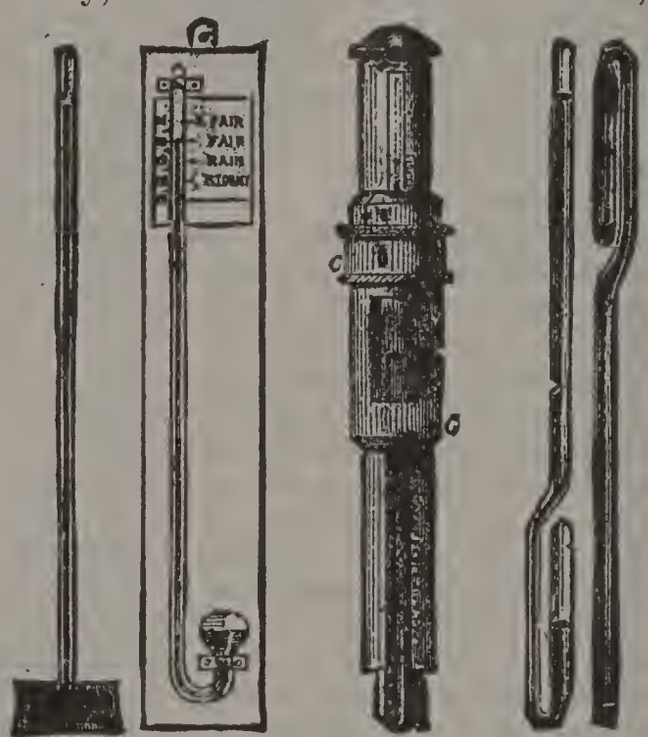
BAROMETER: instrument for measuring the weight or pressure of the atmosphere. The term generally designates an instrument in which the measure is the height of a column of liquid sustained by atmospheric pressure. The fundamental principle of the barometer is best shown in the experiment which led Torricelli to the first discovery of the pressure of the air. A glass tube, about 33 inches in length, open at one end, is completely filled with mercury, and, being firmly closed by the thumb, is inverted and placed vertically in a cup containing mercury. When the thumb is removed, the mercury sinks in the tube till it stands, usually, about 30 inches above the level of the mercury in the cup, leaving in the upper part a space free of air, which receives the name of the Torricellian vacum (fig. 1). The mercury within the tube being thus removed from the pressure of the air, while that in the cup is exposed to it, the column falls, till the pressure at the section of the whole, in the same plane as the surface of the mercury in the cup, is the same within and without the tube. A similar experiment is when, in a U-shaped tube, having one branch much wider than the other, a column of mercury in the narrow branch balances a column of water nearly 14 times as high in the other. In the Torricellian experiment, the air and the space occupied by it take the place of the wide water branch of the U-shaped tube, the glass tube and mercury forming the narrow branch as before; the narrow branch, however, in this case being closed above, to prevent the air from filling, as it were, both branches. In both cases, the heights of the columns are inversely as the specific gravities of the liquids of which they consist; and as air is about 10,000 times lighter than mercury, the aerial column may be inferred to have a height 10,000 times 30 inches. It will be found, under ATMOSPHERE, that from the air lessening in density as its height increases, its height is considerably greater. Any changes that take place in the height or density of the aerial column will be met by corresponding changes in the height of the mercurial column, so that as the latter rises or falls, the former increases or

diminishes. This simple tube is thus an infallible index of the varying amount of atmospheric pressure, in fact, a perfect barometer. The changes, however, are indicated on a scale at least 10,000 times diminished, so that the variations in the tube show very considerable changes in the weight of the atmosphere. If water be used instead of mercury, the water column would be 14, or, more correctly, 13.6 times as high as the mercurial column, or about 34 feet; and the scale on which the changes take place would be correspondingly magnified, so that a water B. should be much more delicate than a mercurial one. Water is, however, exposed to this serious objection, that its vapor rises into the empty space above, and causes by its elasticity a depression of the column, the depressions being different for different temperatures. At zero, Fahrenheit, for instance, the depression thus arising would be $\frac{1}{2}$ an inch, and at 77°, more than 1 ft. It would be doubtful, likewise, at the time of any observation, whether the space referred to was filled with vapor of the elasticity corresponding to the observed external temperature or not, so that the necessary correction could not with certainty be made. The vapor of mercury, on the other hand, at 77° F.—a temperature considerably above the average—produces in the barometer a depression of only $\frac{1}{1250}$ of an inch, an amount practically inappreciable. After 200 years of experience and invention, there is yet no better index of the pressure of the atmosphere than the simple mercurial column of Torricelli, and in all exact observations it is taken as the only reliable standard.

Simple as the barometer is, its construction demands considerable care and experience. It is of the first importance that the mercury to be used be chemically pure, otherwise its fluidity is impaired, and the inside of the tube becomes coated with impurities in such a way as to render correct observation impossible. Mercury as usually sold, is not pure; and before being employed for barometers, must be shaken well with highly dilute but pure nitric acid, to remove extraneous metals and oxides. The same object is effected more thoroughly by keeping it several weeks in contact with the dilute acid, stirring every now and then. After either process, the metal must be thoroughly washed with distilled water, and dried. In filling the tube, it is essentially necessary to get the column free from air and moisture. To effect this, the mercury, after filling, is boiled in the tube, so that air and moisture may be expelled, partly by the heat, partly by the vapor of the mercury. This process demands great experience and skill, but the same end may be more easily and as effectually attained by boiling the mercury, in the first instance, in an atmosphere of carbonic acid, and then pouring it into the previously heated tube by a filler reaching to the bottom of it. Such care is expended only on the best instruments; ordinary weather-glasses, not needing to be quite accurate, are more

simply filled. Notwithstanding all these precautions, minute bubbles of air are liable to keep secreted, and to creep up in the course of time into the Torricellian vacum. To obviate this risk of error, an air-trap is recommended by which any air that may accidentally find its way into the tube is arrested in its ascent to the top, and the instrument sustains no damage from the accident.

Barometers are usually divided into two classes—cistern barometers, and siphon barometers. The simplest form of the cistern barometer is that shown in fig. 1, which requires only to be set properly in a frame, and provided with a scale, to make it complete. Fig. 2 presents another form of that class, being that generally seen in weather-glasses or ordinary barometers. The tube is bent at the bottom, and the cistern is merely an expansion of the lower end. Very generally, the cistern is hidden from view, and pro-



Figs. 1, 2, 4, 6, 7,

tected from injury by a wooden cover in front. There are two causes of inaccuracy in cistern barometers—one being the capillarity, which tends to lower the column; and the other being the difference of level in the cistern caused by the fluctuations in the tube, which renders the readings on the fixed scale above at one time too great, and at another too small, according as this level rises above or falls below the original level from which the scale was measured. The effect of capillarity may be avoided by using tubes of more than half an inch in bore, in which the depression becomes so small, that it may be left out of account; and in smaller tubes it may be estimated from tables constructed for the purpose. Wide tubes have the additional advantage, that atmospheric changes are seen earlier in them than in narrow tubes, there being less friction in the former than in the latter. It is worthy of notice, that the capillary

depression is less in boiled than in unboiled tubes, in consequence of the admixture of a minute quantity of the oxide of mercury, formed in the process of boiling, which lessens the repulsion between the mercury and glass. With reference to the error of level, it must be borne in mind that the height of the column sustained by the atmosphere is always to be reckoned from the lower level. This error becomes all the less the larger the capacity of the cistern is compared with that of the tube, for then a very considerable rise or fall in the tube, when spread over the surface of the cistern, makes only a slight difference of level in it. Care must be taken, then, in ordinary barometers, to make the cistern as large as possible. The only B. in which the error of level is completely obviated is that invented by Fortin, which is

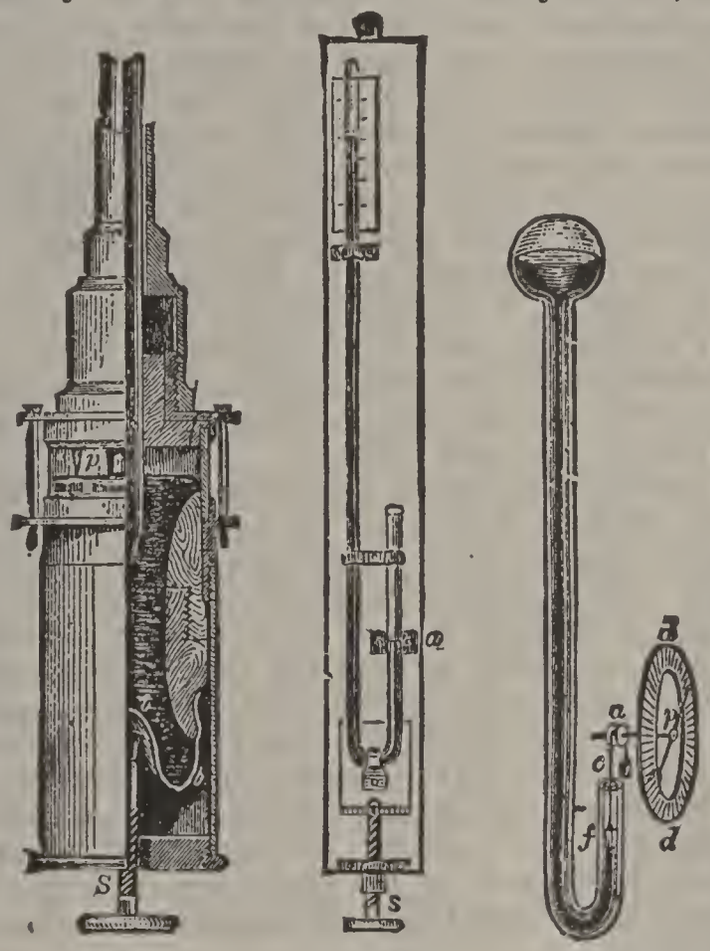


Fig. 3. Fig. 5. Fig. 8.

in every respect the most perfect cistern barometer. The cistern and the lower portion of the tube of this barometer are shown in fig. 3. The cistern is of boxwood, with a movable leather bottom *bb*, and a glass cylinder is inserted into it above, all except the glass being encased in brass. In the bottom of the brass box a screw works, on the upper end of which the leather rests, so that by the sending in or taking out of the screw, the bottom of the cistern, and with it the cistern level of the mercury, can be raised or depressed at will. A small ivory pin, *p*, ending in a fine point, is fixed to the upper frame of the cistern; and when an observation is made, the surface of the mercury is made to coincide with the point of the pin as the standard level from which the barometric column is to be measured. The tube of the B.—

the upper part of which is shown in fig. 4—is enclosed in one of brass, which has two directly opposite slits in it for showing the height of the column, and on the sides of these the graduation is marked. A brass collar, *c*, slides upon the tube with a vernier (q.v.), marked on it for reading the height with exactness.

The siphon B. consists of a bent tube, having the same diameter at the lower as at the upper end. Fig. 5 represents a simple form. A scale is fixed on the upper part of the board; and when an observation is taken, the tube is adjusted by the screw, *s*, so that the top of the lower mercurial column may be on a level with the fixed mark, *a*, the point from which the fixed scale is measured. In the best forms of the siphon B., both tube and scale are fixed, the latter being graduated upwards and downwards from a zero-point near the middle of the tube, and the height of the column is ascertained by adding the distances of the upper and lower levels. The wheel B. as shown in Fig. 8 shows the main features of its construction. It is similar to the siphon B below, but having a cistern above, to increase the amount of variation in the lower branch. A small piece of iron or glass, *f*, floats on the open surface, and a thread is attached to it, and passed over a small wheel, *a*, fixed to a horizontal axis, to which it is kept tight by a small weight, *c*. A pointer, *p*, is fixed to the other extremity of the horizontal axis, which moves to the right or left of the dial, *dd*, according as the mercury falls or rises in the lower branch.

The correction of the B. for temperature is important. Mercury expands 1-9990 of its bulk for every degree Fahrenheit; consequently, a column of 30 inches at 55° F. would be considerably longer than at 32°. To reduce a barometric reading to sea level and to latitude 45°, it is merely necessary to multiply the observed height of the column (after applying the correction for temperature) by the expression (1—.00259 cos L) (1—.00000006 H), where L is the latitude of the place of observation, and H is the height above the sea, in feet. Several secondary considerations also have to be considered, when great refinement is desired, as for capilarity in a small tube. Tables can be obtained from the Smithsonian Institution at Washington.

BAROMETZ, *băr'o-mĕts* (or Tartarian or Scythian Lamb): the prostrate stem (rhizome) of a fern (*Aspidium Barometz*) which grows in the salt-plains near the Caspian Sea. It is shaggy with a silky down, and has a sort of general resemblance to an animal. In the days of ignorant credulity, when the story of the phœnix was received as a truth of natural history, and barnacles were believed to grow into geese, and horses' hairs into eels, marvellous tales were told of the B., which was supposed to partake of the natures of a plant and an animal, to grow on a stalk, and eat grass like a lamb, etc. Erman (*Travels in Siberia*) supposes that the fables regarding the B. may have some connection with the cotton plant.

BARON, n. *băr'ŏn* [F. *baron;* Norm. F. *baran;* It. *barone;* Sp. *varon;* mid. L. *barōnem,* originally signifying man or husband: Gael. *baran,* a great man]: a rank of nobility next to a viscount; two sirloins not cut asunder. BARONAGE, n. *băr'ŏn-āj,* the whole body of barons and peers; the dignity or estate of a baron. BAR'ONESS, n. the wife of a baron. BARONY n. *băr'ŏ-nĭ,* the lordship of a baron; a division of a county in Ireland answering to an English hundred. BARONIAL, a. *bă-rō'nĭ-ăl,* pertaining to a barony. BARONET, n. *băr'ŏ-nĕt,* the title next below a baron, established in England as an order in the reign of James I. BARONETAGE, n. *băr'ŏ-nĕt-āj,* baronets as a body; the dignity of a baronet. BARONETCY, n. *băr'ŏ-nĕt-sĭ,* the title and dignity of a baronet.

BAR'ON: a term probably derived from the Latin word *baro* (allied to *vir.* a man, a hero), which originally signified a stupid, brutal man, afterwards came to signify a man simply, and latterly, by one of those strange transmutations, not uncommon in language, a man pre-eminently, or a person of distinction. Teutonic, Celtic, and even Hebrew derivations also have been assigned to the word; but the fact of its having been introduced into England by the Normans, seems in favor of a Romanic origin. It is now the title of the lowest degree of hereditary nobility. The degree of B. forms a species of landing-place, corresponding among noblemen, in a certain sense, to that of gentleman, at a lower stage of the social pyramid. It was in this sense that the word was used in former times to include the whole nobility of England, because all noblemen were barons, whatever might be the higher ranks in the peerage which they occupied. The word peer has recently come to be used with the same signification, perhaps because it is no longer necessarily the case that every nobleman should be a B., there being instances in which earldoms and other honors have been given without a barony being attached to them, and in which the barony has been separated from the higher degree by following a different order of descent. The general theory of the British constitution, however, still is, that it is as barons that all the peers sit in the upper house; and it is on this ground that the archbishops and bishops are said to sit in virtue of their baronies. The distinction into *greater* and *lesser* barons seems from an early period to have obtained in most of the countries of Europe. The greater barons, who were the king's chief tenants, held their lands directly, or *in capite,* as it was called, of the crown; while the lesser held of the greater by the tenure of military service. The greater barons, who corresponded to the *Freiherren* (free lords) of Germany, had a perpetual summons to attend the great councils of the nation; whereas the latter were summoned only in case of their lands embracing a certain extent, which in England was thirteen knights' fees and a quarter. See KNIGHT'S FEE. When the representation of the middle class in England came to be confided to the knights of the shire and burgesses of towns, the minor barons ceased to receive the royal sum

mons, and by degrees the title B. came to be applied to the greater barons, or lords of parliament, as they were called, exclusively. For an account of the barons of England immediately after the Conquest, and of the lands which they held, see DOMESDAY-BOOK. The habit of conferring the rank of B. by letters-patent, by which it was converted into a mere title of honor, apart from the possession of landed property or of territorial jurisdiction, was introduced by King Richard II., who, 1388, created John Beauchamp, of Holt Castle, B. of Kidderminster. In Germany, the old barons of the empire were for the most part raised to the dignity of *grafs* (counts) and princes; while the lesser, in place of passing into the ranks of the untitled gentry, as in England, constituted a grade of the lower nobility, to which no duties were assigned, and scarcely any political privileges belonged.

The right of wearing a coronet was conferred on barons first by King Charles II.

Baron's Coronet.

A baron's coronet is adorned with six pearls, set at equal distances on the chaplet. Coronets are worn only on great occasions of state ceremonial. In ordinary garb, there is nothing to distinguish a B. from a commoner. A B. has the title of Right Honorable Lord,' etc., and is addressed as 'My Lord,' or 'Your Lordship.' His wife has also the title of 'Right Honorable,' and is addressed as 'Madam,' or 'Your Ladyship.' A B., in signing, sinks his Christian and family surname, and subscribes his titular designation. His children enjoy the prefix of Honorable, as the 'Honorable' (mentioning Christian and surname). In literature and conversation, a deceased B. is referred to by his Christian name, according to his number in the list of peers of the same title, as 'Henry, eighth baron.' See PEER.

BAR'ON AND FEME (or FEMME), *fĕm:* two Norman-French words used in English law-books to denominate HUSBAND AND WIFE (q.v.): see also MARRIAGE.

BAR'ON AND FEMME, in Heraldry: designates the bearing by which the arms of husband and wife are carried *per pale*, or marshalled side by side on the same shield. The husband's arms are always carried on the dexter side. Where the wife is an heiress—i.e., the representative of her father's house—her husband carries her arms, not *per pale*, but in a shield of pretense; and they are quartered with the paternal coat by the issue of the marriage.

BAR'ONET: the diminutive of *Baron*, marking the lowest degree of hereditary honor in the United Kingdom. Baronets were instituted, first, by James I. 1611, May 22. The ostensible object was to promote the plantation of Ulster, in Ireland, with English and Scottish settlers; but the real aim was to raise money. Each B. was bound to maintain 30 soldiers in Ireland for three years, at the rate of 8d. per diem for each man; the wages of one whole year to be paid into the exchequer on the passing of the patent. The sum thus exacted, with the fees of honor due to the officers.

amounted to upwards of £1,000 on each patent. It is a striking proof of the passion for hereditary distinction, that 200 persons were willing to accept the honor on such terms. It was part of the bargain that no title should be created between a B. and a baron, and that the number of the former should be permitted to diminish as the families of the original 200 died out, thus enhancing the value of the title to those that remained. But the latter stipulation was very speedily departed from, and a new commission was appointed to fill up the vacant places, and even to treat with new applicants. Such was the origin of English baronets. From the date of the Union, 1707, those created in England and Scotland were baronets of Great Britain. Irish baronets were created until 1800, since which period all baronetcies are of the United Kingdom. There is no limit to the creation of baronets but the will of the sovereign. At investiture there is no ceremony. The rank is communicated by patent or writ, issued under authority of the crown; the fees of office being considerable. There are differences in the terms on which the honor descends (suggested, perhaps, by the recipient according to family circumstances). Sometimes, according to the patent, the rank is confined to direct heirs-male; sometimes it embraces heirs-male collateral; sometimes, in default of direct male heirs, it passes to the husbands of heirs-female. For the style and privileges of baronets, in matters of ceremony, see Burke's *Peerage and Baronetage*. Baronets have precedence of all knights, except those of the Garter, bannerets made under the royal banner in open war, and privy-councilors. They are entitled to have *Sir* prefixed to their name, with Baron as an affix. The wife of a B. is legally styled *Dame;* but in common speech she is called Lady, and addressed as 'Your Ladyship.' The rank of B. does not raise a person above the degree of commoner; but many baronetcies have, in course of time, been heritably acquired by peers, which lessens the ostensible number.

Baronets of Scotland and Nova Scotia originated in a project of James I.; but were not instituted till 1625, by Charles I. The professed object was to encourage the settlement of Nova Scotia in N. America; and a grant of a certain portion of land in that province, to be held of Sir William Alexander, afterwards Earl of Stirling, who was then his majesty's lieutenant in Nova Scotia, actually accompanied the title—the grants of land being of course illusory, for their very designations were a fiction. The first person who received the honor of a Nova Scotian baronetcy was Robert Gordon of Gordonstone, a younger son of the Earl of Sutherland, whose patent bears date 1625, May 28. There are no new additions to this branch of the baronetage; the latest creation having been in 1707, the year of the Union of Scotland and England. In point of title and popular recognition, there is no distinction between these and other baronets.

BARONIUS, *bâ-ro'nĭ-ŭs*, CÆSAR: 1538, Oct. 30—1607, May 30; b. Sora, in Italy; educated in Naples and Rome

eminent Roman Catholic ecclesiastical historian. He was one of the first pupils of St. Philip Neri, who founded the congregation of the Oratory, of which B. became superior in 1593. He soon afterwards became Father Confessor to the Pope, Apostolical Prothonotary, and finally, 1596, Cardinal, and Librarian of the Vatican Library. On the death of Clement VIII., 1605, in conclave, 30 cardinals voted for the election of B. as Pope; and but for the opposition of the Spaniards, who were indignant at him for his treatise *De Monarchia Siciliæ*, in which he argued against Spain's claim to that country, he might have been elected. The controversy against the work called the *Madgeburg Centuries* (q.v.), which had already been weakly attempted by Muzio, 1570, seemed at that time the most important undertaking for the learning of the Church of Rome. B. entered upon this controversy with great energy and in a position most favorable for access to authorities, composing his *Annales Ecclesiastici a Christo nato ad ann.* 1198 (12 vols., Rome, 1588–1607), in which work he labored till his death. His *Annals* have been frequently reprinted, but the reprints are often incorrect and incomplete. Among the other works of B., his publication of the *Martyrologium Romanum* deserves to be noticed (Rome, 1586, and repeatedly).

BAR'ONS OF THE EXCHEQ'UER: see EXCHEQUER, COURT OF: COMMON LAW: COMMON LAW, COURTS OF: REVENUE.

BAR'ONY: a manorial and hereditary right arising out of land, known to the law both of England and of Scotland. In England, manors were formerly called baronies. In the Scotch law, a right of B. is a right in relation to lands which have been erected, or at least confirmed by a clause in crown-charters making the grant *in liberam baroniam*, as it is called; and by the crown alone could such a right be conferred. It involved a civil and criminal jurisdiction to which, in theory, all the inhabitants of the B. lands were amenable. But such jurisdiction has, by modern legislation, been so limited and obstructed as scarcely ever to be exercised; and, indeed, in regard to the right of B. itself, the clause in crown-charters erecting baronies has, since the abolition of heritable jurisdictions by the 20th Geo. II. c. 43, become obsolete. But they are permitted on the sea-coast for encouragement of fisheries, and the bailies thereof (see BAILIE) are to have the powers of justices of the peace. In England, the lord or baron of the manor may hold his COURT BARON (q.v.: see also MANOR). For the B. in Ireland, see LOCAL GOVERNMENT.

BAROSCOPE, n. *băr'ō-skōp* [F. *baroscope*—from Gr. *baros*, weight; *skopeō*, to look at, to behold]: an instrument, designed to show that bodies in air lose as much of their weight as that of the air which they displace. It consists of the beam of a balance with a small weight at one end, and a hollow sphere at the other, essentially a balance-barometer. See BALANCE. If the B. be placed in a

chamber from which the air is pumped, the sphere goes down showing that it has weight. When a recording device is attached to the B. it becomes a recording barometer. The word is extended in meaning to describe any common form of weather-glass. BAROSCOP'IC, a. *-skŏp'ĭk*, pertaining or relating to a baroscope; ascertained by means of a baroscope.

BAROS'MA: see BUCKU.

BAROUCHE, n. *bă-rôsh'* [Ger. *barutsche:* mid. L. *bir'ŏtă*—from *bis*, twice; *rŏta*, a wheel): a four-wheeled carriage adapted to pleasure riding, having a low body and two inside seats, set facing, with one outer front seat, set higher for the driver. It is also characterized by a falling top (that is, one that falls backwards) and by mud-guards. It is imitated in some recent types of automobile cars. BAROUCHET, n. a similar vehicle, but smaller and lighter, sometimes with only one inside seat.

BARQUE: see BARK.

BARQUENTINE: see BARKENTINE.

BARQUESIMETO, *bâr-kā-sē-mā'tō:* city of Venezuela, cap. of the province of B. It is on an affluent of the Portuguesa, in a high plain, 156 m. w.s.w. from Caraccas. B. was founded by the Spaniards, 1522; and in the beginning of the 19th c. was a flourishing town, with straight wide streets and some fine buildings, with a pop. about 15,000; but in 1812 it was almost totally destroyed by an earthquake. The existing town has been built mostly from the ruins. Pop. 40,000.

BARR, *bâr*, AMELIA EDITH: author: b. Ulverton, Lancashire, England, 1831, Mar. 29; daughter of the Rev. William Huddleston. She was educated in the Glasgow high school; married Robert Barr 1850; came to the United States 1854; lost her husband and three sons by yellow fever in Galveston 1867; removed to New York and began teaching 1869; and published her first story in the *Christian Union* 1871. Her publications have found increasing favor and a widening circle of readers; they include: *Romance and Reality* (1872); *Young People of Shakespeare's Time* (1882); *Cluny McPherson and Scottish Sketches* (1883); *The Hallam Succession* (1884); *The Lost Silver of Briffault* and *Jan Vedder's Wife* (1885); *A Daughter of Fife, The Last of the McAllisters, A Bow of Orange Ribbon,* and *Between Two Loves* (1886); *The Squire of Sandal-Side, A Border Shepherdess,* and *Paul and Christina* (1887); *Master of His Fate, Remember the Alamo,* and *Christopher, and Other Stories* (1888); *Feet of Clay* (1889); *Friend Olivia* (1890); *The Beads of Tasmer, A Rose of a Hundred Leaves, She Loved a Sailor,* and *A Sister to Essau* (1891); *Love for an Hour is Love Forever,* and *Michael and Theodora* (1892); *The Mate of the 'Easter Bell'*; *Prisoners of Conscience* (1897); *I, Thou, and the Other One* (1899); *Trinity Bells* (1899); *The Maid of Maiden Lane* (1900); *The Lion's Whelp* (1901); *Souls of Passage* (1901).

BARR, James, Canadian author: b. Wallacetown, Ontario, 1862. He engaged in journalism in that province, the United States, and in London; and under the pen-name of Angus Evan Abbott has contributed much to magazine literature. Among his separate publications are *American Humorous Verse* (1891), and the American volume in the *International Humorous Series* (1893), the last containing a biographical index of nearly 200 American and Canadian humorists. He is a brother of Robert Barr (q.v.).

BARR, Robert, Scottish novelist: b. Glasgow, 1850, Sept. 16. He spent his childhood in Canada, drifted into journalism, and in 1876 joined the staff of Detroit *Free Press*, and wrote under the name of Luke Sharp. He went to London in 1881 and in 1892 founded *The Idler* with Jerome K. Jerome, but retired in 1895 to devote himself to fiction. He is author of *Strange Happenings* (1882); *In a Steamer Chair* (1892); *From Where Bourn* (1893); *In the Midst of Alarms* (1894); *The Face and the Mask* (1894); *Revenge* (1894); *A Woman Intervenes* (1896); *The Mutable Many* (1897); *One Day's Courtship* (1897); *The Countess Tekla* (1899); *The Strong Arm* (1900); *The Unchanging East* (1900); *The Victors* (1901); *A Prince of Good Fellows* (1902); *Over the Border* (1903); *A Chicago Princess* (1904); *Speculations of John Steele* (1905); *The Tempestuous Petticoat* (1905); etc.

BARRA, *băr'ra:* island near the s. extremity of the Hebrides, belonging to Iverness-shire, Scotland; 8 m. long, 2 to 4 m. broad; in two parts, connected by a low, sandy isthmus. B.-head is in lat. 56° 48′ n., long. 7° 37′ w. The formation of the island is gneiss, and the s. or larger part contains a rocky mountain 2,000 ft. high. The light-house on head, loftiest in Great Britain, is 680 ft. above the sea, seen at a distance of 33 m. The people are chiefly engaged in fisheries and cattle-raising. The parish includes several adjoining islands. Pop. 2,181.

BARRA: petty Mandingo kingdom of w. Africa, near the mouth of the Gambia. The soil is fertile, though marshy, and is well cultivated. The men are notably of fine proportions. The Brit. port Albreda is on Brit. territory near the river's mouth. Pop. of B. about 2,000,000.

BARRA: pleasant suburban town about 3 m. e. of Naples, with numerous fine country residences. Pop. 9,900.

BARRACAN, n. *băr'ra-kăn* [F. *barracan*—from L.L. *barracanus*—from Arab. *barrakân, barkân,* a kind of black gown. Mahn compares with this Per. *barak,* a garment made of camel's hair: Arab. *bark,* a troop of camels: *bârik,* a camel]: a kind of thick strong cloth or stuff resembling camlet. It is used chiefly for outer garments, and is made at Valenciennes, Lisle, Abbeville, Amiens, and Rouen.

BARRACAND, *bă-ră-cŏng,* Leon Henri, French

poet and novelist: b. Romans, Drôme, 1844, May 2. He gave up the law when a very young man in order to write verses; but he was not much known as a poet until *Dananiel* (1886) appeared, under the pseudonym of LEON GRANDET, followed by a sequel, *Doctor Gal* (1870). He had already, however, attracted attention by some fictions, and has steadily risen in importance as a novelist—*Yolande* (1867); *Hilaire Gervais* (1885); *The Second Lieutenant's Manuscript* (1887); and *The Cousin* (1888), being perhaps best known. His *Lamartine and the Muse* (1883) was crowned by the French Academy.

BARRACK, n. *băr'răk* [Sp. *barraca*, a cabin or hut; It. *baracca*, a covered shed without walls—from mid. L. *barræ*, stakes or bars: Gael. *barr*, a spike: F. *baraque*]: house for soldiers; used commonly in the plural, having been originally of huts thatched or covered with boughs. Barracks are permanent structures for accommodation of soldiers. In the United States they have usually been log or frame buildings, but those recently built are preferably of brick or stone. The furniture, kitchen utensils, etc., are provided by the govt., as also are an iron bedstead, a mattress, four sheets, pillow and two pillow cases, and chest for private property, for each man. Married soldiers occupy separate buildings specially provided, or they rent private houses. With proper ventilation these allowances may be lessened without danger to health. Large grounds are required for exercise, offices, etc.—In Great Britain barracks are of stone or brick, and the furniture is provided by the war office. Previous to 1792 Brit. soldiers were usually billeted on the people, as it was thought dangerous to isolate the soldiery from the citizenship; but it was contended that that system was vexatious and burdensome, and tended to immorality.

BARRACKPORE, *băr-rak-pôr'*: native town and military cantonment on the e. bank of the Hoogly, 16 m. up the stream from Calcutta. Pop. 37,330. From the salubrity of its air, B. is a favorite retreat for Europeans from Calcutta, the governor-general having here his country residence. B. appears to have long had this distinction; Mr. Job Charnock, the founder of Calcutta, having erected a bungalow here as far back as 1689. In 1857, B. became famous as the cradle of the formidable mutiny or rebellion of that year. Several regiments of native troops were stationed at Barrackpore. The men objected to biting off the ends of the cartridges for the Enfield rifle, believing, according to their religion that paper was polluted by animal fat. The troubles connected herewith—a mere prelude to the fatal outbreak at Meerut in May—commenced about the beginning of February, and grew in intensity, till at last two regiments of Bengal native infantry had to be disbanded—the 19th, March 31; and the 34th, May 5.

BARRACOON, n. *băr'ră-kôn* [from *barrack*]: in *Africa*, a fort or castle; an enclosure where newly captured slaves

are quartered and where they remain under restraint until carried off by vessels in the slave-trade.

BARRACUDA, n. *băr-ra-kū'da* [Sp. *barrocuda*]: a fish —the *Sphyræna barracuda*, found in the vicinity of the Bahamas and other West Indian Islands.

BARRADA, or BURADA, *bur-râ'dâ:* a river of Syria, rising in lat. 33° 50′ n., long. 36° e., flowing s.s.e. towards Damascus, above which it divides, one branch being diverted to irrigate the city and its gardens, while the other passes on the n. side. The branches, which it is supposed were the *Pharpar* and *Abana* of Scripture, afterwards unite, and flow into the marshes and lake of Bahr-el-Merj.

BARRAFRANCA, *bâr-râ-frân'kâ*, town of Sicily, province of Caltanisetta, about 10 m. s.e. of the town of Caltanisetta; pop. about 9,000.

BARRAGE, n. *băr'raj* [F. *barrage*]: an artificial obstruction placed in a water course to obtain increased depth of water; a Normandy fabric made of linen interwoven with worsted flowers.

BARRAGON: see BARRACAN.

BARRA MANSA, *băr'râ mân'sâ:* town of Brazil: province of Rio de Janeiro, on the right bank of the Parahiba; 70 m. n.w. of the city of Rio de Janeiro. Pop. 6,000.

BARRANDITE, n. *bâr-răn'dit* [after *Barrande*, a Bohemian geologist]: a mineral occurring in spheroidal concentric concretions with indistinctly radiated fibres. It occurs at Przibram, in Bohemia. It is aluminous iron phosphate.

BARRAS, n. *băr'răs* [F.]: a substance consisting of resin and oil that exudes from the wounds in fir-trees.

BARRAS, *bâ-râ'*, PAUL-JEAN-FRANÇOIS-NICOLAS, Count de: 1755, June 30—1829, Jan. 29; b. Foy, Provence: distinguished character of the French Revolution. In his youth he served as a lieut. against the British in India, and after his return home, wasted his property in Paris in dissipation. He eagerly joined the revolutionary party, and was a deputy of the *Tiers État* in the states-general, 1789. He was actively concerned in the storming of the Tuileries, was appointed administrator of the department of Var, and afterwards of the county of Nice. In the Convention, he voted for the death of the king without delay or appeal, and 1793, May 31, declared against the Girondists. The siege of Toulon, and triumph of the revolutionary party in the s. of France, were to a great measure owing to his activity and energy; and after the victory, he was deeply concerned in all the bloody measures which were adopted. Yet he was hated by Robespierre and the Terrorists, as one of the less decided revolutionists; and their overthrow was accomplished mainly by him, the Convention appointing him commander-in-chief, and virtually investing him with the dictatorship for the time. While holding this high office, in which he acted with great decision and vigor, and on the same day on which Robespierre fell, he paid a visit

to the temple, and provided for the better treatment of the king's son; he hastened also to the Palais de Justice, and suspended the execution of a large number of persons who had been condemned to death. On subsequent occasions he acted with decision both against the intrigues of the Royalists and the excesses of the Jacobins; and on 13th Vendémiaire (1795, Oct. 5), being again appointed commander-in-chief by the Convention, he called his young friend Bonaparte to his aid, and crushed the sections with merciless discharges of artillery. The Directory being appointed, 1795, Nov., B. was nominated one of the five members, and in this capacity he procured the nomination of Bonaparte as commander-in-chief of the army in Italy. It was he who arranged the marriage of Bonaparte with the widow Beauharnais. On 18th Fructidor (see FRUCTIDOR: FRANCE), he was again invested with the dictatorship, and was again victorious. His authority now became preponderant in the Directory, and he affected the pomp of a king, and began to give splendid entertainments in the palace of the Luxembourg. This continued about two years till the decline of the power of the Directory. After 30th Prairial, Sieyes and he had the whole executive power in their hands; and while B. secretly negotiated, it is said, with the Bourbon princes, demanding a large reward for their restoration, Sieyes, in secret understanding with Bonaparte, brought about the revolution of 18th Brumaire. Notwithstanding the favors he had formerly conferred on Bonaparte, he was now, perhaps unavoidably, an object of suspicion to him, was compelled to remove from the neighborhood of Paris, resided in Brussels, then in Marseille, was banished to Rome, and thence sent to Montpellier, being kept under constant surveillance of the police, and actually found to have been engaged in conspiracies for the restoration of the Bourbons. After the restoration, he returned to Paris, where he died.

BARRASS, *bâ râs'*, EDWARD, Canadian clergyman: b. Durham, England, 1821, July 22. He entered the ministry in 1840, and removed to Toronto in 1853. He became the assistant editor of the *Christian Guardian*, and published, among other works, *A Gallery of Deceased Ministers* (1853); *Class Meetings: Their Origin and Advantages* (1865); *A Gallery of Distinguished Men* (1870); and *Smiles and Tears: or, Sketches from Real Life* (1879).

BARRATRY, *băr'ra-trĭ*, COMMON (or in old English law-books, *Barretry*): the offense of frequently inciting and stirring up suits and quarrels among the people. *One* offensive act of the kind is not sufficient in order to maintain an indictment for this offense; but it must be shown that the party accused *frequently*, or at least on more than *one* occasion conducted himself in the way imputed; and therefore the principle of the law appears to strike at the *habit* or *disposition* of evil-minded persons who would incite to quarrelling, or busy-bodies, as they are in fact called

in old law-reports; who, to use a familiar expression, 'set people by the ears.' In England, the punishment for this offense is fine and imprisonment; but if the offender belongs to the profession of the law, he may besides be disabled from practicing his profession for the future: thereafter any attempt to practice law exposes him to severe and summary punishment.

In the various states of the Union, the laws are much to the same effect.—Akin to this offense is that of suing another in the name of a fictitious plaintiff. It is an offense also for an attorney to buy demands for the purpose of suing on them. It is not, however, an offense for attorney and client to divide a compensation received.

There is also *Barratry of Mariners*—the fraud of the master or mariners of a ship tending to their own advantage, but to the prejudice of the owners.

BARRE, *băr'rĕ:* town in Worcester co., Mass., on the Ware river; and on the Boston and Maine railroad, 21 m. n.w. of Worcester. It has manufactures of cotton and woolen goods, and of straw; and is noted for an institution for educating feeble-minded children. Pop. (1910) 2,957.

BARRE: city of Washington co., Vt., about 6 m. s.e. of Montpelier, on a branch of the Winooski river. It is on the Barre branch of the Vt. Central railroad. It is an important centre of the granite industry, and contains also several industrial establishments. It is the seat of Goddard Seminary, and has a public high school and a public library. It was chartered as a city in 1894. Pop. (1910) 10,734.

BARRÉ, *bâ-rā',* Isaac: soldier: 1726–1802, July 20; b. Dublin, Ireland. He was a graduate of Trinity College, Dublin, and an ensign in the British army, seeing service in Canada during Gen. Wolfe's campaign against the French, being adjutant-gen. 1760. When Wolfe fell, B. was by his side, and he appears in Benjamin West's celebrated painting of the scene. B. afterward went to England, and was elected to parliament. He was credited by some with being author of the letters of Junius, but this he denied. He died in London.

BARREL, n. *băr'rĕl* [F. *baril;* OF. *bareil,* a barrel—from OF. *barre;* W. *bar,* a bar or stave: It. *barile*: Sp. *barril*]: a vessel in its typical form a cylinder bulging out at the center of its length, and made of wooden saves held in place by hoops, with flat heads fitted in the ends, especially such a vessel about 30 inches long, a size considerably smaller being termed a *keg,* and considerably larger a *cask* or *hogshead.* (B. made of sheet iron do not bulge in the center, but are sometimes protected with longitudinal flanges to stiffen them). Also some form of cylinder, tube or drum (usually hollow) likened to a barrel; specifically, the firing tube of a firearm; the drum of a windlass, capstan, etc., the rotating drum of a barrel-organ (see below); a drum-like box in a watch containing

the mainspring, etc.; a cylindrical boiler-shell; the tube or chamber in which the piston of a pump works; the tube of a lock for the entrance of the key-stem; that part of a sword-hilt that is grasped in the hand; the trunk of an animal, especially of a butchered beast; the cylindrical quill of a feather. V. to pack or put in a barrel. BAR'RELLING, imp. BARRELLED, pp. *băr'rĕld.* Put in a barrel; having barrels. BAR'RELAGE, n. a total of barrels as a measure of capacity, as the barrelage of a flour-mill. BARREL-BULK, n. in shipping, a measure of capacity for freight, five cubic feet, or one-eighth of a ton. BARREL-CART, n. a barrel mounted on wheels like a push-cart, for gathering rubbish, cuttings, etc., in a park or large garden. BARREL COPPER, copper mined in lumps suitable for shipping in barrels, distinguished from mass copper. See copper. BARREL-CURB, n. a rough wooden cylinder sunk in digging a well to prevent a cave-in of the loose earth. BARREL-LIFTER, n. a flattened hook for grasping a barrel by the chine; a pair of barrel-hooks. BARREL-HOOK, n. a hook on the end of a rod, one of a pair used to grasp barrels for hoisting. BARREL-LOOM, n. a Jacquard loom, so called because the pattern cards pass over a flat-sided drum; also a form of loom in which a toothed drum is used to raise the warp-threads. BARREL MAKING. Formerly wooden barrels were made by hand, the cooper shaping the staves with a draw knife, and dressing strips of pliable wood for the hoops. They are now made by machinery, the methods varying in different shops. The wood is preferably oak, the staves being shaped by a machine. The best staves are split off blocks with the grain. They are clamped in a mechanism while the ends are dressed or trimmed down, shaped and beveled. The pieces of wood forming the head are jointed and connected with wooden pins. The parts of a head being clamped together, the edges are beveled circularly in a lathe-like machine. In putting together the parts of a barrel, the staves are set up in a framework, confined at the lower ends, and brought together at the top by winding a rope around held in tension by a windlass. The heads are slipped in place, and hoops (usually temporary hoops) are drawn on with claws, after which the barrel goes to a lathe to be turned up and smoothed or finished. Heat and moisture are often used in the operation to assist bending the staves. Barrels that are to be tight, as for holding oil, have thick staves, and a coating of glue inside. Sheet iron and steel barrels are now common, the metal being stamped, and in the case of steel sometimes electrically welded. The bung-holes are stamped so as to turn in some of the metal, making a bearing for a bung, or a surface which may be threaded to hold a screw-stopper. BARREL-ORGAN, n. a musical organ (see ORGAN) in which a barrel or cylinder studded with pegs or pins is made to rotate by means of a crank. As the barrel turns, the pegs open valves through which currents

of air from the bellows pass into a set of pipes and produce notes constituting a tune. The hand-organ played by street musicians is a familiar form. BARREL-PIER, n. a support for a military bridge, consisting of a raft of empty barrels, which serve the purpose of pontoons or boats. The barrels for the abutments are joined in a raft at each side of the stream, and made fast to the shore. The intermediate pieces, or rafts of barrels, are anchored at suitable intervals between them. String-pieces or timbers are lashed to the rafts, from shore to shore, and across these are laid planks for the roadway. BARREL-PLATE, n. in machine guns, a disk or plate by means of which the barrels of machine guns are held in place around the axis. The Gatling gun has two B.P., one at the front, the other at the rear. BARREL-PEN, n. a steel pen with a split cylindrical shank adapting it to fit upon a round holder. BARREL PROCESS, a process of chlorination for separating precious metal from the ore. See chlorination. BARREL-SAW, n. a saw formed by cutting teeth in the end of a cylinder, so that it is adapted to cut out a round disk from a surface; also a saw used in barrel-making. BARREL-SETTER, n. a mechanism for straightening and truing gun-barrels. BARREL-VAULT, n. in architecture, a simple semi-cylindrical vault. See Vault. BARREL-WORK, n. in mining, work in removing native copper, nearly pure, of the size called barrel-copper.

BARREN, a. *băr'rĕn* [OF. *brehaigne* or *baraigne*, unfruitful]: not producing young; not fertile; dull; in *bot.*, without pistil. BAR'RENLY, ad. *-lĭ*. BAR'RENNESS, n. unfruitfulness; sterility.

BARREN, n.: name sometimes applied in the United States w. of the Alleghany Mts., to a tract of land a few feet above the level of a plain, sparsely wooded and producing grass. The soil is sometimes very fertile.

BARRENWORT, n. *băr'rĕn-wŭrt* [Eng. *barren; wort*, herb]: name of *Epimedium*, genus of plants belonging to order *Berberidaceæ*. It has a creeping rhizome, a twice ternate stem-leaf with cordate leaflets, reddish flowers in panicles, with inflated nectaries, four sepals, eight petals, four stamina, and curious anthers.

BARRET, n. *băr'rĕt* [F. *barrette*—from L. L. *barretum, birretum*, dimin. of L. *birrus*, a woolen overcoat used to keep off rain]: a cap formerly worn by soldiers.

BAR'RETT, BENJAMIN FISK: minister: b. Dresden, Me., 1808, June 24; d. Germantown, Pa., 1892, Aug. 6. He graduated from Bowdoin College 1832, studied theology at the Harvard Divinity School, embraced the doctrines of Swedenborg 1839, held pastorates in New York, Cincinnati, and Philadelphia, and 1871 was elected pres. of the publishing assoc. of his denomination. He has published a large number of books, including *The Golden City* (1874), *Footprints of the New Age* (1884); *Life of Swedenborg* (1841); *Letters on the Divine Trinity* (1860;

4th ed. 1873); *Catholicity of the New Church* (1863); *Episcopalianism* (1871); *New View of Hell* (1870; 5th ed.); *Swedenborg and Channing* (1878); and *Heaven Revealed* (1885); He was editor of *The Swedenborg Library*, 12 vols.

BAR'RETT, EDWARD: naval officer: 1828–1880, Mar.; b. New Orleans. At the age of 13 he became a midshipman; served in foreign waters; entered the U. S. Naval Academy, then recently established, 1846; and graduated the same year. He served in the war with Mexico, commanded the *Jamestown* on an expedition to the African coast 1848, and later served in the E. Indies. In 1861 he received appointment as instructor of gunnery, the following year was court-martialled for disloyalty, but was not only acquitted, but received high praise for his record. He rendered valuable services in the civil war; was a member of the first expedition which reached Hankow, on the Yang-tse-kiang river, China; and commanded the first naval ship that passed the jetties constructed by Eads at the mouth of the Mississippi. By various promotions, he reached the rank of commodore.

BARRETT, GEORGE HOOKER, American actor: b. Exeter, England, 1794, June 9; d. 1860, Sept. 5. He left England with his mother, an actress of some celebrity, and arrived at Boston in October 1796; he made his first appearance the same year in the part of Cora's child, in *Pizarro*, at the age of two years. He commenced playing in New York in 1806, at the Park Theatre, in the part of *Young Norval*, and became manager of the Bowery Theatre, New York, in 1826, in company with E. Gilbert. He afterward visited England, and in 1837 performed at Drury Lane Theatre, London, under the management of Alfred Bunn. He was also manager of the Tremont Theatre, Boston, and in 1847 opened the Broadway Theatre, New York, but he did not retire from the stage. His favorite characters were in genteel comedy, but he also acted in face and low comedy with great success. From his elegance and stateliness he was known by the sobriquet of 'Gentleman George.'

BARRETT, JOHN, American diplomatist: b. Grafton, Vt., 1866, Nov. 28. He was graduated at Dartmouth College in 1889, and the same year went to the Pacific coast and engaged in journalism till 1894. During 1894–8 he was United States minister-resident and consul-general at Bangkok, Siam, and, afterward represented several American newspapers in Manila, Philippine Islands. After the American victory in Manila Bay he made a special study of conditions in the Philippines, and, returning by way of London, addressed a joint assembly of members of the House of Commons and the London Chamber of Commerce, on the condition of trade in the Far East. He returned to the United States in the summer of 1899, and did much in support of the action of the

Federal government in the Philippines. From 1903–4 he was minister to Argentina, from 1904–5 minister to Panama, from 1905, May 1, to 1906, December, minister to Columbia, and since 1907 director of the Bureau of American Republics. He has written much on Asiatic and Latin-American subjects, chief among his works being *Admiral George Dewey* (1899); *The Far East and Siam—A Wonderland of Asia* (1903); etc.

BARRETT, John Kelly, Canadian official: b. Hamilton, Ontario, 1860, June 5. He was graduated at Holy Cross College, Worcester, Mass., in 1872, and after serving as principal of St. Mary's Model School in Hamilton entered the public service, principally in the line of education. He became conspicuous in 1890, when the authorities of Manitoba abolished the Roman Catholic schools and the official use of French in that province, by defending the claims of the Roman Catholic minority and by bringing suit against the city of Winnipeg to test the constitutional power of the Provincial Government in passing the School Act of 1890.

BARRETT, Lawrence, American actor; b. Paterson, N. J., 1838, April 4; d. 1891, March 21. His first appearance on the stage was in 1853, in *The French Spy*. In 1856 he appeared as Sir Thomas Clifford in *The Hunchback* at Chambers Street Theatre, New York, and in 1857 he supported Burton, Charlotte Cushman, Edwin Booth, and other eminent actors. He served as a captain in the 28th Massachusetts Infantry in the early part of the Civil War. Later he acted at Philadelphia, Washington, and at Winter Garden, in New York, where he was engaged by Mr. Booth to play Othello to his Iago. After this he became an associate manager of the Varieties Theatre in New Orleans, where for the first time he played the parts of Richelieu, Hamlet, and Shylock. In 1864 he secured *Rosedale* from Lester Wallack, and after appearing in its leading character at New Orleans, began his first tour as a star actor. In 1867 he played at Maguire's Opera House in San Francisco, and was then manager of the California Theatre till 1870. Late in 1870 he went with Mr. Booth, playing in alternate characters in Booth's Theatre. In 1871–2 he was manager of the New Varieties Theatre in New Orleans, and in December 1872 acted Cassius to Booth's Brutus in New York. During 1873–4 he made tours through the United States. In 1875 he appeared as Cassius in *Julius Cæsar*, in Booth's Theatre, and later as King Lear. He was the first actor to appear as Daniel Druce in the United States in Mr. Gilbert's play. In 1882 he brought out *Francesca da Rimini*, at the Chestnut Street Theatre in Philadelphia. In 1883 this play ran for nine weeks at the Star Theatre, in New York. In 1887 he began his first joint engagement with Edwin Booth in Buffalo. Mr. Barrett's last production of a new play was *Guido Ferranti* by Oscar Wilde, brought out in 1890, at the Broadway Theatre, New York. His last

appearance was in 1891, March 18, in the character of Adrain du Mauprat to the Richelieu of Mr. Booth. He wrote *Life of Edwin Forrest.* and *Life of Edwin Booth.*

BARRETT, William Alexander, English journalist and musician: b. London, 1834, Oct. 15; d. 1891, Oct. 17. He was musical critic of the London *Morning Post* from 1867 till his death, and edited several musical journals. He published a *Life of Balfe, The Choristers' Guide, English Church Composers; English Folk Songs, Glees, and Madrigals,* and a *Dictionary of Musical Terms* (with Stainer).

BARRETT, William Fletcher, English scientist: b. Jamaica, West Indies, 1844, Feb. 10. He assisted Prof. Tyndall at the Royal Institution, London, 1862–6, and in 1873 became professor of experimental physics in the Royal College of Science, Dublin. He was one of the founders of the Society for Physical Research, and is widely known for his original researches in magnetism and radiant heat. He has published *Lessons in Science* (1880); *Early Chapters in Science* (1899); *A Monograph on the Socalled Divining Rod* (1897–1900).

BARRETT, Wilson, English dramatist and actor: b. Essex, 1846, Feb. 18; d. London, 1904, July 22. He went upon the stage in 1863. In 1874 he became manager of the Amphitheatre in Leeds, and later lessee of the Grand Theatre in Leeds; in 1879 manager of the Court Theatre, London; and in 1881, of Princess' Theatre, London. He visited the United States in 1886, and, returning to England in 1887, became manager of the Globe Theatre; revisited the United States in 1888, and again in 1889; in 1896 became manager of the Lyric Theatre, London; and in 1899, of the Lyceum. His dramas include *The Sign of the Cross; Pharaoh; Now-a-days; The Daughters of Babylon; In Old New York;* etc.; and he adapted for stage purposes such well-known novels as *The Deemster; The Bondman; The Manxman;* and *Quo Vadis.*

BARRI, Girald de: see Giraldus Cambrensis.

BARRICADE, BARRIER, BARRISTER: see under Bar.

BARRICADES': defense-works employed in both military and naval services. Military engineers, and sappers and miners, are instructed in the art of barricading streets and roads with beams, chains, *chevaux-de-frise,* and other obstacles, either in defending a town against besiegers, or in suppressing popular tumults. In a ship, a strong wooden rail, supported on stanchions, and extending across the foremost part of the quarter-deck, is called a barricade; during a naval action, the upper part of this barricade is sometimes stuffed with hammocks in a double rope-netting, to serve as a screen against the enemy's small-shot. B. have been made use of in street fights since the middle ages, but they are best known in connection with the insurrections in the city of Paris. As early as 1358, the streets of Paris were barricaded against the Dauphin,

afterwards Charles V. A more noteworthy barricade-fight was in 1588, when 4,000 Swiss soldiers, marched into Paris by Henry III. to overawe the Council of Sixteen, would have been utterly destroyed by the populace, firing from behind B., had the court not consented to negotiation; and the result was, that the king fled next day. The next barricade-fight of importance in Paris was in 1830, which resulted in the expulsion of the Bourbons from the throne of France, and the election of the citizen king, Louis Philippe. During the three days which this revolution lasted, the number of B. erected across the streets amounted to several thousands. They were formed of the most heterogeneous materials—overturned vehicles, trees, scaffolding-poles, planks, building-materials, and street paving-stones—men, women, and children taking part in their erection. In 1848, Feb. the insurrection against Louis Philippe commenced with the erection of B.; but the most celebrated and bloody barricade fight was that between the populace and the provisional government, 1848, June 23–26, which ended in the defeat of the people. The national losses by this fight were estimated at 30,000,000 francs; 16,000 persons were killed and wounded, and 8,000 taken prisoners. Napoleon III. widened and macadamized many of the principal streets of Paris, partly to prevent erection of B; yet in the second siege of Paris (1871), many were erected by the Communists.

BARRIE, Canada: town and county-seat of Simcoe co., Ontario; on the Grand Trunk railway, at the western extremity of Lake Simcoe; 64 miles north-northwest of Toronto. Barrie was founded in 1832 and incorporated in 1871. It is a popular and beautiful summer resort, and the starting point of the Lake Simcoe steamers. The chief industrial establishments are planing and grist mills, carriage works, breweries, brick-yards, engine and boiler works, and wicker works. The waterworks and electric light plant are owned by the corporation. There are 10 churches, a collegiate institute and business college. In 1896 Allandale, a railway centre, was annexed to the town, and the Grand Trunk railway has here a large round-house, machine shops, etc. A United States consular agent is stationed here. Pop. (1901) 5,949.

BARRIE, *băr'ĭ*, James Matthew, author: b. Kirriemuir, Forfarshire, Scotland, 1860, May 9. He graduated at Edinburgh Univ. 1882, and wrote editorials for a paper in Nottingham, England, for nearly two years; then established himself in London as a journalist. He published 1887 his first book, *Better Dead*, which attracted attention; it was followed by *Auld Licht Idylls* and *When a Man's Single* (1888); *A Window in Thrums* (1889); *My Lady Nicotine* (1890); *The Little Minister* (1891); *A Holiday in Bed, and Other Sketches* (1892); *Sentimental Tommy* (1896); *Margaret Ogilvy* (1896), a biography of his mother; *Tommy and Grizel* (1900); *The Little White Bird*

(1902); etc. He has also written the following dramatic works: *Walker, London* (1893); *Jane Annie* (1893); *The Professor's Love Story* (1895); *The Little Minister* (1897); *The Wedding Guest* (1900); *Quality Street* (1901); *The Admirable Crichton* (1902); *Little Mary* (1903); *Peter Pan* (1904); *Alice-Sit-by-the-Fire* (1905); etc.

BAR'RIER ACT: name commonly given to an act of the General Assembly of the Church of Scotland, 1697, Jan. 8, intended as a barrier against innovations, and a hinderance to hasty legislation. It provides that no change can be made in the laws of the church without being submitted by that General Assembly which first approves it, to the consideration of all the presbyteries, and approved by a majority of them; after which it still remains to be considered by the next General Assembly, which then may or may not pass it into a law. The B. A. is regarded as of the greatest importance, both in the Established Church of Scotland, and in the Free Church. Analogous regulations have been adopted by other Presbyterian churches.

BAR'RIER REEF: an immense coral-reef extending along the n.e. coast of Australia for nearly 1,300 m., at a distance from the shore of from 10 to upward of 100 m. The reef is, in general, precipitous, and in many places rises out of great depths, lines of 280 fathoms having failed to reach the bottom on the outer side. Ignorance of its extent led to many shipwrecks; but it has now been surveyed, and laid down on charts. In the course of its length there are several breaks or passages in it, only one being safe for ships. In the voyage from Sydney to Torres Strait, the inner route is usually taken. It is narrow, but safe.—The reefs called *barrier reefs* are one of the three characteristic kinds of coral formation, being distinguished both from *fringing* reefs and from *atolls*. See POLYNESIA: CORAL ISLANDS.

BARRILI, *bâr-rē'lē*, ANTONIO GIULIO, Italian novelist: b. Savona, 1836, Dec. 14. Engaging in journalism when only 18, he assumed the management of *Il Movimento* in 1860, and became proprietor and editor of *Il Caffaro* in Genoa in 1872. He had taken part in the campaigns of 1859 and 1866 (with Garibaldi in Tyrol) and in the Roman expedition of 1867, and sat in the Chamber of Deputies in 1876–9. He is one of the most prolific writers of modern Italy, and among his numerous stories are *Elm Tree and Ivy* (1868); *The Vale of Olives* (1871); *As in a Dream, The Devil's Portrait* (1882); *The Eleventh Commandment, A Whimsical Wooing*. He has published several volumes of criticism, among which may be named: *Ilrinnovamento Letterario Italiano* (1890).

BARRINGTONIACEÆ, *băr-rĭng-tō-nĭ-ā'sē-ē:* natural order of exogenous trees and shrubs, natives of tropical countries, and generally very beautiful both in foliage and flowers. Few plants, indeed, exceed some of them in beauty. The stamens are very numerous, and form a very

conspicuous part of the flower. The fruit is fleshy, with bony seeds lodged in pulp. That of some species is eaten, as *Careya arborea*, an Indian tree, the stringy bark of which is used in the countries along the foot of the Himalayas as a slow match for matchlock guns. Humboldt and Bonpland mention that children become quite yellow after eating the fruit of an American species, *Gustavia speciosa*, of which however, they are very fond; but that this color disappears in a day or two. The MOORDILLA (*Barringtonia speciosa*) is described by Sir J. E. Tennent as a tree which much attracts the attention of travellers in Ceylon. It has dark, glossy leaves, and delicate crimson-tipped white flowers. 'The stamens, of which there are nearly 100 to each flower, when they fall to the ground, might almost be mistaken for painters' brushes.' Some botanists include this order in *Myrtaceæ* (q.v.).

BAR'RISTER (or *Bar'raster*, as sometimes spelt in old books): the distinctive name by which an advocate or pleader at the English and Irish bars is known. Barristers are admitted to their office under the rules and regulations of the INNS OF COURT (q.v.), and they are entitled to exclusive audience in all the superior courts of law and equity, and generally in all courts civil and criminal, presided over by a superior judge. In the whole of the county courts, attorneys are allowed to practice without the assistance of counsel; also at petty sessions, though at the quarter sessions where four counsel attend, the justices always give them exclusive audience. In Scotland, the same body are styled ADVOCATES (q.v.). See ATTORNEY: ADVOCATES, FACULTY OF.

In the United States the term B. is not in use: the term most nearly corresponding is Attorney and Counselor-at-Law (see ATTORNEYS: ETC.).

BAR'RISTER, REVISING: see REVISING BARRISTER.

BARROS, *bâr'ōs*, JOÃO DE: most distinguished of Portuguese historians: 1496–1570, Oct. 20; b. Viseu, of an ancient and noble family: became a page to King Emmanuel and afterwards companion to the crown prince. He wrote a historical romance in his 24th year, whose style had a peculiar beauty. Hereupon the king assigned him the task of writing the history of the Portuguese in India, which he undertook, but of which only the first three decades proceeded from his pen, under the title of *Asia Portugueza* (Lisb. 1552–63); the continuation, extending to twelve decades, was the work of Diego de Couto. (A new edition of the whole appeared at Lisbon, 8 vols., 1778–88.) B. was for some time governor of the Portuguese settlements in Guinea, afterwards treasurer and general agent for the Indies. In 1539, the king bestowed on him the province of Maranhao in Brazil, that he might found a colony there; an enterprise which he forsook after much loss.

BARROSA, *bar-ro'sâ:* village of Spain 16 m. s.s.e. of Cadiz; celebrated in history as the place where General

Graham (afterwards Lord Lynedoch), with a handful of English troops, 1811, March, succeeded in gaining against the French, after his Spanish allies had retreated, one of the most glorious victories of the Peninsular campaign. More than 2,000 French were killed and wounded (some authorities give nearly 3,000 killed alone), 300 prisoners taken, 6 pieces of cannon and an eagle—the first captured in the war.

BARROT, *bâ-rot:* Camille Hyacinthe Odilon: 1791, July 19—1873, Aug. 6; b. Villefort, Lozère: French jurist and statesman, son of a member of the Convention, and afterwards of the Council of Five Hundred. In 1814, he became an advocate of the court of cassation, Paris, and soon gained repute as an eloquent pleader. Entering the chamber of deputies young, he came to be regarded as one of the leaders of the liberal opposition. At the Revolution of 1830, he was one of the three commissioners appointed by the provisional government to accompany Charles X. from Rambouillet to Cherbourg, on his embarkation for England. Under the new government, he was appointed prefect of the dept. of the Seine; and in Lafayette's ministry, a member of the council of state. After Casimir Périer became minister, he lost his place in the council of state, and began his opposition career in the chamber of deputies against the reactionary policy of the government, and became the rallying-point for all who favored the principles of the July revolution. He essentially contributed to the removal of the Doctrinaires (q.v.) from office, 1836, Feb., and energetically opposed the ministry of Molé, which was overthrown, 1839, Jan. When, in March 1840, Thiers was placed at the head of the government, B. declared himself in favor of the ministerial policy on the oriental question. On the return of Guizot to office, Oct. following, his opposition to the government was renewed. B. was conspicuous in the Reform movement of 1847. On the outbreak of the struggle of 1848, Feb. 23, when Louis Philippe called upon Thiers to form a new ministry, B. was appointed president. His advice to the king to withdraw his troops proved fatal to the throne of July. In the last sitting of the chamber of deputies, B. supported the claim of the Count de Paris to the throne, and the regency of the Duchess of Orleans. Under the presidency of Louis Napoleon he was for some time a minister and conducted the government with success till 1851, when he retired from active political life. He, however, took part in the conference in favor of Poland, Paris, 1864. In 1872, he was made a councilor of state and vice-pres. of the council. He d. at Bougival, near Paris. See his *Mémoires Posthumes* (4 vols., Par. 1875–76).

BARROW, n. *băr′rō* [Sp. *barraco,* a boar: AS. *bearg:* Bohem, *braw*]: in *OE.*: a castrated boar; a hog.

BARROW, n. *băr′rō* [AS. *berewe*—from *beran,* to carry; It. *bara,* a litter: Ger. *bahre,* a barrow]: a hand-carriage.

BARROW, n. *băr′rō* [AS. *beorg* or *beorh*, a hill or mound: Icel. *bjarj*, a large stone: Gael. *barpa*, a conical heap of stones]: a hillock or mound anciently raised over the graves of warriors or nobles, especially those killed in battle. Barrows are very numerous in Great Britain, and many of them are supposed to belong to a period long prior to the Roman invasion. The counties of Wilts and Dorset are especially rich in these remains. In the sepulchral B., the human remains are buried either in a rude stone 'cist' or chest, in which the body was doubled up, or are laid at full length in the earth, accompanied by arms and other utensils. Where the body was burned, the remains were laid on the floor of the barrow, in a cist excavated on the spot, or at a later epoch, in a clay urn. Sir R. Hoare considers the Wiltshire B. as indicating three stages in the progress of society. The first class contains spear and arrow heads of flint and bone; the second of brass; and the third contains arms and instruments of iron. One of the largest barrows in Europe is Silbury Hill, near Marlborough, Wiltshire, which covers 5 acres, 34 perches of land, and has a slope of 316 ft., with a perpendicular height of 170. The practice of erecting sepulchral mounds prevailed among all the principal nations of antiquity, both in Europe and in Asia, and they are found in great numbers in Central America. Many barrows are only partly artificial; natural mounds having been shaped by man into the form which it was wished they should take.

BAR′ROW: river in the s.e. of Ireland, in importance next to the Shannon. It rises in the n. of Queen's co., on the n.e. slope of the Slieve Bloom mountains; flows first e. past Portarlington to the border of Kildare co., and then s. between Queen's, Kilkenny, and Waterford cos. on the w. and Kildare, Carlow and Wexford cos. on the e., passing the towns of Athy, Carlow and New Ross. It has a course of 100 m. through a carboniferous, granitic, and silurian basin. Two m. above New Ross it receives the Nore (q.v.), and eight m. e. of Waterford, it is joined by the Suir (q.v.). These three rivers (called the Three Sisters, from their rising in the same mountain-ridge, and joining near the sea, after flowing through different counties) form, near the sea, the large and secure estuary of Waterford harbor, 9 m. long. The B. is navigable for vessels of 200 tons to New Ross, 25 m. up, and for barges to Athy, 65 m. up, whence the Grand canal communicates with Dublin. The B., below Portarlington, falls 227 ft.

BARROW, Cape or Point: a term applied to two prominent localities of the Arctic region, in honor of Sir John Barrow. (1) Point Barrow, on the north coast of Alaska, in lat. 71° 23′ n., and long. 156° 31′ w., long considered as the most northerly spot on the American mainland. (2) Cape Barrow, on the coast of Canada, or Coronation Gulf, is in lat. 68° n., long. 111° w.

BARROW, *băr′ō*, Isaac: 1630–77: eminent English di-

vine and mathematician. He received his early education at the Charter-house, where he was distinguished chiefly by his negligence and pugnacity. At Felstead school, Essex, to which he went next, he greatly improved; and in 1643, he was entered at Peter-house, Cambridge, under his uncle Isaac, then a fellow of that college, and finally Bp. of St. Asaph. On the ejection of his uncle, 1645, he removed to Trinity College, where he became B.A., 1648, fellow, 1649, and M.A., 1652. Finding that to be a good biblical scholar he must know chronology, that chronology implies astronomy, and astronomy mathematics, he applied himself to the latter science with distinguished success. To the classics he had already devoted much study, and on the vacancy of the Greek chair, he was recommended for the office; but a suspicion of Arminianism interfered with his success. After this disappointment, he went abroad (1655), and travelled during four years through France and Italy, to Smyrna and Constantinople, back to Venice, and home through Germany and Holland. On the voyage from Leghorn to Smyrna, his determined personal courage seems to have been instrumental in scaring away an Algerine pirate, after a brisk exchange of shots. Soon after his return he took orders in the church, and in the following year he was appointed prof. of Greek. The neglect with which he was treated after the Restoration is celebrated in his couplet addressed to the king—

> Te magis optavit rediturum, Carole, nemo,
> Et nemo sensit te rediisse minus.

In 1662, he was appointed to the Gresham professorship of geometry, which, on his being appointed to the Lucasian professorship, 1663, he thought it his duty to resign. The latter also he resigned 1669, in favor of his pupil Isaac Newton. On quitting his professorship he obtained from his uncle a small living in Wales, and from Dr. Seth Ward, Bp. of Salisbury, a prebend in that cathedral. He devoted the revenues of both to charitable purposes, and resigned them 1672, on being appointed by the king Master of Trinity College. To him, while in this office, is due the foundation of that valuable library, which is one of the chief ornaments of the university. In 1675, he was nominated vice-chancellor of the university. B. was distinguished for nobility and force of character. Of his original mathematical works, the principal are his *Lectiones Geometricæ* and *Lectiones Opticæ*, of which it has been said that they are 'a mine of curious interesting propositions, to which geometry is always applied with particular elegance.' As a theologian, his fame rests chiefly with his sermons, which are very remarkable as specimens of clear, exhaustive, and vigorous discussion. His sermons were generally of excessive length. One, on charity, lasted three hours and a half; and at Westminster Abbey, he once detained the audience so long that they procured the playing of the organ 'till they had blowed him down.' B.'s English works, consisting of sermons, expositions, etc., have been

edited by Dr. Tillotson, Dean of Canterbury, and prefaced with a life by Mr. Hill. His works, besides those already mentioned, are very numerous, and include *Euclidis Elementa, Euclidis Data, Mathematicæ Lectiones, Opuscula,* containing Latin sermons, poems, speeches, etc. *Lectiones Mathematicæ* and *L. Geometricæ* have been translated by Kirby and Stone. *Euclidis Elementa* has also been translated.

BAR'ROW, Sir John, Baronet: 1764, June 19–1848, Nov. 23; b. Dragleybeck, in Lancashire: was early instructed in mathematics; and after having published a small volume on land-surveying, filled a situation in a Liverpool iron foundry, visited Greenland with a whaler, and after his return taught mathematics in an academy at Greenwich. He received an appointment as private sec. and keeper of accounts to Lord Macartney, who went as ambassador to China, where B. learned the Chinese language. When Lord Macartney became gov. of Cape Colony, B. made extensive excursions in the interior, which he described in *Travels in the Interior of Southern Africa* (2 vols., Lond. 1801–03). Having returned to London, in the year 1804, he was appointed by Lord Melville sec. to the admiralty, which situation he held for 41 years except for a short time in 1806. Beside *Travels in China* (Lond. 1804), B. published *A Voyage to Cochin-China in the years* 1792 *and* 1793 (Lond. 1806), *The Life of Macartney* (2 vols. Lond. 1807), *A Chronological History of Voyages into the Arctic Regions* (Lond. 1818), also a series of Lives of English Naval Worthies. Under Peel's ministry, 1835, he was raised to the baronetcy. In the year 1845 he retired from public service, but afterwards published *An Autobiographical Memoir* (Lond. 1847), and *Sketches of the Royal Society.* He died at London. He rendered many services to geographical science by suggesting and promoting scientific expeditions; with him also originated the idea of the Geographical Soc., founded 1830, of which he was vice-pres. till his death.

BARROW-IN-FURNESS, *băr'rō-ĭn-fĕr'nĕs:* seaport and rapidly increasing town of North Lancashire, England; on the s.w. coast of the peninsula of Furness, opposite a small Island called Barrow Island, traditionally reported to have been an ancient burial place of Norse rovers. By rail it is 268 m. n.n.w. of London, 36 m. w.n.w. from Lancaster. It is connected by railway with Dalton (q. v.) from which it is not quite four m. distant, and so with the whole railway system of England. Its rapid growth is owing to the great quantity of iron ore, of the best quality—red hematite—in the neighborhood, and to the establishment of mines and smelting works. A small quantity of iron ore from this neighborhood, was, for many years, exported to be smelted elsewhere; but about 1859, smelting works were established at B. which soon gave employment to a great number of men. In 1865, these works produced about 160,000 tons of iron. The Barrow Hematite Steel Company has now 16 blast-furnaces in constant operation,

and 18 converters for making Bessemer steel. The company partly raise their own ore, employ at their works and mines nearly 5,000 men, and use about 500,000 tons of ore annually. The amount of pig-iron made yearly is about 580,000 tons, about 220,000 tons being taken to the steel works, and there converted by the Bessemer process into steel. Great quantities of limestone and coke are used in the iron furnaces and steel works. The red hematite of B. yields an average of 57 per cent. of iron. The B. steel works are the largest Bessemer steel works in Britain, producing about 140,000 tons of steel annually. In the B. works, the iron is conveyed in a molten state from the blast furnaces to the 'converters,' where it is made into steel. Copper as well as iron ore is obtained in considerable quantity near B., and is exported to the amount of about 3,000 tons annually. About 20,000 tons of slate also are annually quarried in the neighborhood, and sent to other parts of Great Britain.

The town of B. is built on a regular plan, mostly in rectangles. St. George's Church is a handsome Gothic building, erected chiefly at the expense of the Dukes of Devonshire and Buccleuch, the principal land-owners of the town and neighborhood. There are other places of worship belonging to the Church of England and other denominations. Among public buildings are the North Lonsdale Hospital, Town Hall, Workmen's Club and Institute, a large covered market, swimming baths, schools, banks, etc.

The ownership of land in the town and neighborhood is chiefly vested in the Dukes of Buccleuch and Devonshire; and two docks, which were opened 1867 by Mr. Gladstone, are named, respectively, after these noblemen. The Ramsden dock (78 acres) and the Cavendish dock (200 acres) were opened 1877, and are 24 ft. in depth. Barrow Island is the great ship-building centre, where vessels in size between 20 and 8,300 tons are constructed and (in full work) about 5,000 hands are employed. The flax and jute works, built by local capital, employ as many as 1,800 women and girls. The imports of B. are timber, from Sweden and Canada, coal from Wales, canned goods from New York, jute, and general products; exports, ore, steel rails, and pig-iron. Passenger steamers run daily to Belfast, and there is regular service of Glasgow and the Isle of Man. The interesting ruins of Furness Abbey, founded by Stephen 1127, are near. Pop. (1901) 57,584.

BARROWS, *băr'ōz*, Elijah Porter, American clergyman and educator: b. Mansfield, Conn., 1807; d. 1888. He was professor of sacred literature in Western Reserve College, Ohio, 1837–52, and of Hebrew in Andover Theological Seminary, 1853–66. In 1872 he became professor of Hebrew at Oberlin College, Ohio. Beside many contributions to the *Bibliotheca Sacra*, he published *Companion to the Bible* (1867); *Sacred Geography and Antiquities* (1872); *Manners and Customs of the Jews* (1884).

BARROWS. John Henry, American educator; b.

Medina, Mich., 1847, July 11; d. Oberlin, Ohio, 1902, June 3. He was graduated at Olivet College in 1867; subsequently studied in Yale College, Union and Andover Theological Seminaries, and at Göttingen; was pastor of the First Presbyterian Church, in Chicago, for 14 years; organized and was president of the World's Parliament of Religions, at the World's Columbian Exposition in Chicago, in 1893. He delivered a course of lectures on Christianity in the principal universities in India, under the patronage of the University of Chicago, 1896–7, and became president of Oberlin College in 1898. He published *The Gospels are True Histories* (1891); *Life of Henry Ward Beecher* (1893); *Christianity the World Religion; The World Pilgrimage; History of the Parliament of Religions* (1893); *The Christian Conquest of Asia* (1899).

BARROWS, Samuel June, American clergyman and author: b. New York, 1845, May 26. After a varied early career he became private secretary to William H. Seward in 1867, went to Utah in 1870 with Chaplain Newman of the United States Senate, and reported the debate with the Mormons. He was graduated at Harvard Divinity School in 1875, and while an undergraduate accompanied as correspondent of the New York *Tribune* Gen. Stanley's Yellowstone expedition in 1873, and Gen. Custer's Black Hills expedition in 1874, taking part in the battle of the Big Horn. He was pastor of the First Unitarian Church, Dorchester, Mass., 1876–81; editor of the *Christian Register* (1881–97); secretary of the United States delegation to the International Prison Congress, Paris, 1895; and United States representative on the International Prison Commission, 1896. From 1897–9 he was a member of Congress from the 10th Massachusetts district. He has written *The Doom of the Majority of Mankind* (1883); *Shaybacks in Camp; Crimes and Misdemeanors in the United States; A Baptist Meeting House; Isles and Shrines of Greece* (1898).

BARROW STRAIT: the earliest of Parry's discoveries; leading to the w. out of Lancaster Sound, which Parry's immediate predecessor, Captain, afterwards Sir John Ross, had pronounced landlocked in that direction. Beside its main course, B. throws off *Prince Regent's Inlet* to the s. and *Wellington Channel* to the n. The passage averages about 40 m. in breadth, extending nearly along the parallel of 74° n., from 84° to 90° w. It was named in honor of Sir John Barrow.

BARRULET, n. *băr'rul-ĕt* [dimin. of Eng. *bar*]: in *her.*, one-fourth of a bar—a twentieth part of the field. It is seldom or never borne singly: sometimes called also a *bracelet*. When disposed in couples, barrulets are *bars-gemels*. Bars gemels, pl. *bârz'jĕm'lz* [Eng. *bar;* L. *gemellus*, twin]: two horizontal bars on a field, at a short distance from each other.

BARRY, *băr'ĭ*, Alfred, English prelate: b. London, 1826, Jan. 15. He was a son of the architect Sir Charles Barry, and was educated at Cambridge. He was head-

master of Leeds grammar-school, 1854–62; principal of Cheltenham College, 1862–8, and of King's College, London, 1868–82. He was canon of Worcester, 1871–81, of Westminster 1881–4. He became primate of Australia and bishop of Sydney in 1884, but resigned his seat in 1889 and returning to England was rector of St. James, Piccadilly, London, 1895–1900. He has published *Introduction to the Old Testament* (1850); *Life of Sir C. Barry* (1867); *Boyle Lectures* (1876–8); *Christianity and Socialism* (1891); *England's Mission to India* (1894); *Hulsean Lectures* (1895); *The Position of the Laity* in the *Outlook* series (1903); *The Christian Sunday, Its History* (1904); etc.

BARRY, Ann Spranger, English actress: b. Bath, 1734; d. London, 1801. She was several times married. Her first great success was in the character of Cordelia, at Drury Lane, London (1767). Her farewell was as Lady Randolph, at Covent Garden (1797). Equal to Mrs. Woffington and Mrs. Cibber in tragedy, she surpassed them both in comedy. As Desdemona she had, during her whole career, no competitor. She is buried in Westminster Abbey.

BARRY, *băr'ĭ*, Sir Charles, r.a.: 1795, May—1860, May 12; b. Westminster, Eng.; son of Walter, architect of the two Houses of Parliament. Educated at private schools in Leicestershire and Bedfordshire, he was indentured to Messrs. Middleton and Bailey, architects, Lambeth. In 1817, at the age of 22, he went to Italy; afterwards visiting Egypt, Greece, and Rome. On his return to England, after an absence of three and a half years, he became the successful competitor for the design of a church at Brighton. He was also the architect of the Manchester Athenæum, a building in the Grecian style; and of the Grammar School of King Edward VI. at Birmingham; the latter esteemed the most beautiful of his works. In London, he designed the Traveller's Club, and the Reform Club, both in Pall Mall, and the College of Surgeons, Lincoln's Inn Fields. After the burning of the old Houses of Parliament, 1834, on a public competition, B.'s design for the new building was adjudged the best. The work was commenced 1840; and 1852, Feb. 3, the queen opened the Victoria Tower and Royal Gallery in state, and knighted the architect. Chosen a Royal Academician, 1842, Sir Charles was also a Fellow of the Royal Soc., of the Soc. of Arts, etc. See the Life by his son, Bishop B. (Lond. 1867).

BAR'RY, Comtesse du: see Du Barry.

BAR'RY, James: 1741, Oct. 11—1806, Feb. 22; b. Cork, Ireland; historical painter, distinguished more by the force of his conception than the excellence of his manipulation, or the beauty of his color. His *chef-d'œuvre* is the *Victors at Olympia*. B. was a *protégé* of Edmund Burke. He was irritable and quarrelsome; was expelled from the Royal Acad., and died in poverty.

BARRY, John: naval officer: 1745–1803, Sep. 13; b. Tacumshane, county Wexford, Ireland. He emigrated to

America at the age of 15, and was in the employ of merchants in Philadelphia; then went to sea, and rose to be master of a vessel. He was given command of the *Lexington* 1776, and captured the tender *Edward*, the first British war-ship taken in the revolution. After commanding the frigate *Effingham* for a time, he was transferred to land duty, and was in command of a company handling artillery at the battle of Trenton, and served as aid to Gen. Cadwalader. He commanded the *Raleigh* 1778, and the *Allianee* 1781, and conveyed Col. Laurens, and afterward Lafayette and Noailles, to France. He then took the *Alliance* to the W. Indies, where, 1782, he was engaged with an English vessel, but on the appearance of a superior force was compelled to save his ship by escape. On the reorganization of the navy he was appointed senior officer—the first commodore in the new navy. He died in Philadelphia.

BARRY, John, D.D.: Rom. Cath. bishop: 1799–1859, Nov. 21; b. county Wexford, Ireland. He studied theology in Ireland, and emigrated to America, completing his education at the Charleston (S. C.) Theol. Seminary. He was ordained 1825, and was made pastor in Augusta, Ga. During the cholera epidemic, 1832, he used his private residence as a hospital, and as an orphan asylum for children of those who died, after the epidemic had ceased. B. was appointed vicar 1839; vicar-gen. of the diocese of Charleston and superior of the theological seminary 1844; vicar-gen. of the diocese of Savannah 1853, and bishop 1857. He visited Europe for his health 1859, and died in Paris.

BARRY, John Arthur, Australian journalist: b. 1850. He led a roving life for many years, but finally settled in Sydney, N. S. W. His writings include: *Steve Brown's Bunyip* (1893); *The Great Deep* (1895); *The Lack of the Native Born* (1898); *A Son of the Sea* (1899); *Against the Tides of Fate* (1899); *Old and New Sydney* (1901); *Red Lion and Blue Star* (1902).

BARRY, John Daniel, American novelist: b. Boston, Mass., 1866, Dec. 31. He has written *A Daughter of Thespia; The Intriguers; Mademoiselle Blanche; The Prineess Margarethe, a Fairy Tale; The Four Goldies* (1903); etc.

BARRY, Sir John Wolfe, English engineer of eminence, youngest son of Sir Charles Barry: b. London, 1836, Dec. 7 He built the present Blackfriars Bridge in London, the Tower Bridge, the Barry Dock at Cardiff, and planned the railway in Argentina from Buenos Ayres to San Rosario. He has published *Railway Appliances* (1876); *Lectures on Railways and Locomotives* (1882); *The Tower Bridge* (1894).

BARRY, Martin, English physiologist: b. Fratton, Hampshire, 1802; d. Beecles, Suffolk, 1855, April. He studied at the medical schools of London, and at several on the Continent, and took his degree of M.D. in Edinburgh, in 1833. He wrote much on physiological subjects, and especially on animal development and embryology.

He was elected a member of the Royal Society in 1840. In 1844 he was appointed house-surgeon to the Royal Maternity Hospital, Edinburgh. His means being ample, he gave his professional services largely to the poor.

BARRY, Patrick: nursery gardener and editor; 1816, May—1890, June 23; b. near Belfast, Ireland. He received a good education, and taught school in Ireland until 1836, when he emigrated to America, and accepted employment in a nursery at Flushing, L. I. Four years later he was in partnership in the same business with George Ellwanger, in Rochester, N. Y., the firm becoming widely known and wealthy. B. was editor of the *Genesee Farmer* 1844–52, and of the *Horticulturist* 1852–54. He was pres. of the Western N. Y. Horticultural, and other similar societies, and published several works.

BARRY, Thomas Henry, American soldier: b. New York, 1855, Oct. 13. He graduated at West Point, 1877, and passed through the various grades of the service to his appointment of brigadier-general, United States volunteers, 1900, June, 18. He became brigadier-general in the regular army 1903, Aug. 18. From August, 1898, to February, 1900, he was adjt.-gen. of the 8th army corps in the Philippines, and chief of staff, Div. of the Philippines, 1900-01. Com. army of Cuban pacification, 1907.

BARRY, William Farquhar: military officer: 1818, Aug. 8—1879, July 18; b. New York. He graduated at West Point 1838, and chose the artillery arm of the service. He fought in Mexico 1846–48, was stationed at Fort McHenry 1849–51, and was appointed capt. 2d artil. 1852, July 1. During the next two years he was in the Seminole war, was at Fort Leavenworth, 1857–58; and 1858 on the board appointed to revise the system of light artillery practice. In 1861 he was appointed maj. of the 5th artil., and chief of artil. in the Army of the Potomac; brig.gen. of vols. 1861, Aug. 20. He was in the Peninsular campaign; in 1863 was chief of artil. on Gen. Sherman's staff, and served through the Georgia campaign 1864. He was made brev. maj.gen. of vols. and brev.col. U.S.A. 1864, Sep. 1; brev. brig.gen. and brev.maj.gen. U.S.A. on the same day 1865, Mar. 13, for gallant conduct; col. 2d artil. 1865, Dec. 11; and was mustered out of the volunteer service 1866, Jan. 15. He served on the frontier and in the forts until his death. He was part author with J. G. Barnard of *Engineer and Artillery Operations of the Army of the Potomac*, 1861–2, and of *Tactics for the Field Artillery of the United States*.

BARRY, William Francis, English Roman Catholic priest, theologian, and novelist: b. London, 1849, April 21. He was educated at Oscott and the English College, Rome; was professor of philosophy at Birmingham Theological College, 1873–7; professor of divinity at Oscott, 1877–80; and has been rector of a parish in Dorchester, Oxfordshire, from 1883. Besides writing much on metaphysical themes in English reviews, he is the author of several brilliant novels, including: *The New Antigone* (1887); *The Place of*

Dreams (1894); *The Two Standards* (1898); *Arden Massiter* (1900); *The Wizard's Knot* (1901); *Ernest Renan* (1905). He has also published *The Papal Monarchy* (1902). *The Dayspring* (1903); *Newman* (1904); *Heralds of Revolt* (1904); *Renan* (1905); *Tradition of Scripture* (1906).

BARRY, William Taylor, American statesman: b. Lunenburg, Va., 1784, Feb. 5; d. Liverpool, England, 1835, Aug. 30. He graduated at William and Mary College (1803), and was soon after admitted to the bar. In 1810 he became a member of Congress from Kentucky. He served in the War of 1812; and from 1814–16 was United States senator from Kentucky. In 1828 he was appointed postmaster-general under Jackson; and was on his way abroad as minister to Spain at the time of his death. He was the first postmaster-general who had a seat in the Cabinet.

BARRY, Cornwall: See Procter, Bryan Waller.

BARRY: a seaport and railway terminus of south Wales, county of Glamorgan, seven miles southwest of Cardiff. It has been practically brought into existence by the construction (1884–9) of a dock of 70 acres area here, between Barry Island and the mainland, at a cost of about £850,000, the entrance being between two breakwaters respectively 2,600 and 700 feet in length. Barry possesses churches and chapels, market-hall, public-hall, seamen's institute, etc., and carries on a large export trade in coal. As a municipality it is markedly progressive. Pop. (1901) 27,000.

BARRYMORE, *băr'ĭ-mōr*, Maurice, American actor: b. India, 1847; d. Amityville, L. I., 1905, March 25. He was educated at Cambridge. Having gone upon the stage he came to America and made his first appearance in 1875. Afterwards he was most of the time in this country, acting as leading man with Modjeska, Mrs. Langtry, Mrs. Bernard Beere, and Olga Nethersole. He wrote several plays, among them *Nadjeska*.

BARTAS, *bâr-tâ'*, Guillaume de Salluste du: abt. 1544–90; b. Montfort, Armagnac: soldier, diplomatist, and man of letters. His reputation was great during his lifetime, alike in 'the court, the camp, the grove.' His chief poem, *The Divine Week and Works*, an account of the creation, with the history of the Jews as far as the book of Chronicles, is said to have had considerable influence on Milton's *Paradise Lost*. Thirty editions of the work passed through the press in six years. Dryden, when a boy, thought his verse incomparably superior to Spenser's; an opinion, however, which he was afterwards ashamed of. B.'s name is now forgotten, or remembered only in connection with bad taste. It is not to be denied, however, that his fancy, though generally grotesque and lawless, occasionally strikes out most picturesque imagery and epithets. His use of compound words led to their introduction into

England, through his translator Sylvester (q. v.), and to the consequent enrichment of our poetry.

BARTENSTEIN, *bâr'tĕn-stīn*, TREATY OF, a treaty between Prussia and Russia against France, concluded at Bartenstein, Prussia, 1807, April 26, soon after the battle of Eylau. The objects of the alliance were to re-establish Prussia within the limits of 1805; to dissolve the Rhine Confederation; to restore Tyrol and Venice to Austria; to secure the co-operation of England and Sweden to aggrandize Hanover at the expense of France; to restore the House of Orange; and to obtain from France indemnities to the kings of Sardinia and Naples. The terms of this alliance are chiefly important for their similarity to the terms offered Napoleon at Prague (1813). The town of Bartenstein has manufacturing interests of importance. Pop. (1900) 6,779

BARTER, v. *bâr'tėr* [OF. *bareter*, to deceive: Sp. *baratar*, to truck or exchange: It. *barattare*, to truck or barter (see BARGAIN)]: to traffic by exchanging one kind of goods for another; to exchange; to trade; N. *originally*, noisy contention in making a bargain; traffic by exchanging. BAR'TERING, imp. BARTERED, pp. *bâr'tėrd*. BAR'TERER, n. one who —SYN. of 'barter, v.': to change; exchange; truck; commute; substitute; interchange.

BAR'TER, in Commerce and Political Economy; the exchange of one commodity for another, as differing from the sale of commodities for money. It is usual to suppose that in the history of any community B. preceded the other methods of commerce, as people would find the convenience of exchanging one article for another before they were acquainted with money or credit. In fact, ships visiting savage countries are generally to some extent freighted with weapons, tools, or ornaments, to be used in B., if it be desirable to carry on a trade with the inhabitants. Under the older systems of political economy, there was much useless discussion about the question, whether a B.-trade or a money-payment trade was more advantageous to the community at large, and which of them should be encouraged while the other is depressed. On one side, it was maintained that nothing but an export sale for cash was really profitable; on the other, that it was more advantageous to get goods in return, because thus there was a double transaction and double profit. See BALANCE OF TRADE. In modern industrial communities barter is a very exceptional thing, having been superseded by the use of money in various forms.

BARTER, in Law, or EXCHANGE, as it is now more generally called in law-books, is a contract for transferring property, the consideration being some other commodity; or it may be described as a contract for the exchange of two subjects or commodities. It thus differs from *sale*, which is a contract for the transference of property in consideration of a price in *money*. See EXCHANGE: SALE OF GOODS.

BARTFA, *bŏrt'fŏ*, or BARTFELD, *bârt'fĕlt:* small but very old free town of North Hungary, province of Saros, on the Topla, 155 m. n.e. of Pesth. Its position on the borders of Galicia has frequently made it a place of refuge for Poles and Russians. Its hot baths are much frequented and a trade in wine, brandy, linen and earthenware is carried on. Pop. abt. 6,000.

BARTH, *bârt*, AUGUSTE, French Oriental scholar: b. in Strassburg, 1834, May 22. He is a member of the French Institute and his annual reports in *Revue de l' Histoire des Religions* are much esteemed. His most important work is *Les Religions de l' Inde* (1879; English translation 1882).

BARTH, *bârt*, HEINRICH, PH.D., D.C.L.: 1821, Feb. 16—1865, Nov. 25; b. Hamburg, Ger.: enterprising modern African traveller. He studied at the University of Berlin. In his youth his favorite studies were the Roman and Greek classics and antiquities, with the geographical sciences. After visiting Italy and Sicily, he embarked, 1845, at Marseille, and from Gibraltar passed over to Tangier, in Africa. Proceeding along the Algerian coast he made excursions into the interior, to Tunis, Tripoli, and Bengazi. On his journey thence to Cairo, he was attacked by a band of Arab robbers, whom he bravely resisted, but was severely wounded, and lost all his effects and papers. He afterwards extended his researches into Egypt, Sinai, Palestine, Asia Minor, and Greece. These travels occupied him nearly three years, and in 1849 he published, at Berlin, an account of a portion of them in a work entitled *Wanderungen durch die Küstenländer des Mittelmeeres*. Dec. 8 of that year he again sailed from Marseille, under appointment by the British government as scientific companion to Mr. James Richardson, a political and commercial commissioner to central Africa. Starting from Tripoli 1850, Feb. 4, they crossed the Great Desert amid much difficulty and danger. B. soon separated from his friends, and pursued his researches for the most part by himself. B.'s associates succumbed to the climate, and B. was alone. He did not, however, return disheartened, but continued his explorations, which, when he returned to Tripoli, 1855, Sept., had extended over 24 degrees of latitude and 20 of longitude, from Tripoli in the n. to Andamawa in the s., and from Bagirmi in the e. to Timbuktu in the w., upwards of 12,000 m. The result of his researches was given to the world in his *Travels and Discoveries in Central Africa*, 5 vols. (Lond. 1857–58). Afterwards, he made several journeys in Greece, Turkey, Asia Minor, and other countries on the Mediterranean. Shortly after returning from one of these, he died at Berlin. In 1858 appeared his *Reise von Trapezun durch die nördl. Hälfte Kleinasiens nach Skutari;* in 1862 his *Sammlung und Bearbeitung central-afrik. Vocabularien.*

BARTH, Jean, or BART, *bâr:* 1651–1702; b. Dunkirk (according to some accounts, in the Netherlands); son of a fisherman: French naval hero. At an early age he entered the Dutch navy, but on the commencement of the war with Holland he passed over to the French service. As persons not of noble birth could not then obtain the rank of officer in the navy, he became captain of a privateer. In this capacity he displayed astonishing bravery, so that Louis XIV. despatched him on a special mission to the Mediterranean. His exploits at last induced the king to appoint him lieut. of a man-of-war. In an action against a superior English force he was taken prisoner, and carried to Plymouth, from which he made his escape in an open fishing-boat to France, where the king raised him to the rank of captain. In 1696, Louis XIV. received him with distinction at Versailles, but at the same time spoke continually of the mischance which had befallen him the year before. Stung by this, B. hastened to Dunkirk, and in spite of the blockade of the harbor by the English, undertook a cruise, in which he was remarkably successful. Louis XIV., in a personal audience 1697, appointed him to the command of a squadron, upon which B. exclaimed: 'Sire, you have done well in this.' The courtiers laughed, as at a piece of gross rudeness; but the king took the answer in good part. The peace of Ryswick terminated his active career. He died at Dunkirk. His rough frankness and coarse wit, in which be spared neither high nor low, made him popular, no less than his boldness and readiness for battle. When the Prince de Conti was nominated king of Poland, B. was required, by command of Louis XIV., to convey him to Elsinore, and the ship being attacked by the English on the voyage, was near being taken. After the action, the prince expressed to him his great delight that they had escaped from the enemy. 'We had no need,' was the reply, 'to be afraid of being made prisoners; I had despatched my son with a match to the powder-magazine, to blow up the ship on the first wink!'

BARTHÉLEMY, *bär-tāl-me'*, Auguste-Marseille: 1796–1867, Aug.; b. Marseille, France; poet and politician. Removing to Paris, in 1825, with Méry, he issued a collection of satirical epistles, *Les Sidiennes;* and the year after, a mock-heroic poem, *La Villéliade ou la Prise du Château de Rivoli.* This vigorous political squib had great success; in the course of the year, it ran through fifteen editions, and is said to have put into the pockets of the young authors abt. 24,000 francs. Continuing to work together in opposition to the government of Charles X., and in the interest of Napoleonic ideas, they put forth upwards of 20 pieces of a like satirical cast before 1830. The revolution of July of that year found B. in prison for an offense done to the government in one of his later publications. His liberation was immediate; and with his friend Méry, he celebrated the victory of the people in a poem entitled *L'Insurrection*, characterized by Sainte-Beuve as one of the happiest productions of the writers. A pension of 1,200 francs, bestowed on him by Louis-Philippe, did not deter B. from at

tacking his ministers also; and the pension was soon withdrawn. During all the changes which followed, B. was indefatigable as a versifier on the political events of the day: but, except for readers intimately versed in the detail of these, his poems have now no interest, though the force and brilliancy of his satire is admitted. He was a warm supporter of the second Napoleonic *régime*. He died at Marseille, of which city he was librarian.

BARTHÉLEMY, JEAN JACQUES: 1716, Jan. 20—1795, Apr. 30; b. Cassis, near Aubagne, Provence: historian and antiquary. He was educated under the Jesuits for the church, but soon abandoned all thought of becoming a priest, and devoted himself to the study of the Greek, Hebrew, Syriac, Arabic and Chaldee languages, though he retained the dress and title of an abbé. He acquired distinction first by the discovery of the Palmyran alphabet. As asst supt. of the royal cabinet of medals, he augmented it by a great number of costly specimens. From 1758 to 1789, he quietly pursued his learned researches, which were interrupted by the Revolution. He was imprisoned 1793, Sep., on charge of being an aristocrat, but almost immediately released; and was soon offered the situation of national librarian, but his age and infirmities compelled him to decline it.

His most celebrated and popular work is the *Voyage du jeune Anacharsis en Grèce dans le Milieu du quatrième Siècle avant l'ère Chrétienne*, Paris, 1788, 4 vols. (Travels of the Young Anacharsis in Greece about the Middle of the Fourth Century B.C.). The work (see ANACHARSIS) is very pleasing, and shows extensive knowledge of the ancient world, especially of Greece and its colonies. Later criticism has, however, pointed out many deficiencies and anachronisms. It has been translated into almost every European language. Among B.'s other works may be mentioned a romance, entitled *Caryte et Polydore* (Paris, 1760); *Explication de la Mosaïque de Palestrine* (Paris, 1760); *Réflexions sur l'Alphabet et la Langue de Palmyre* (Paris, 1754).

BARTHÉLEMY SAINT-HILAIRE, *săn-te-lār'*, JULES: b. Paris, 1805, Aug. 19. He first held a subordinate office under the minister of finance; and was one of the editors of the *Globe*, a Paris paper, 1828–30. After the July revolution, he took part with the society *Aide-toi et le Ciel t'aidera* (q.v.), revised several of its democratic manifestoes, established the *Bon Sens*, and continued to attack the government of Louis Philippe in the *Constitutionnel*, the *Courrier-Français*, and the *National*. In 1833, he desisted from political strife, and betook himself to more quiet studies. In 1834, he was named *Repétiteur* for the French literature class in the *Ecole Polytechnique;* and 1838, prof. of Greek and Latin philosophy in the *Collége de France*. The revolution of February, however, brought him once more into the political arena. He was appointed sec. to the Provisional Government, but refused his support to the government of Cavaignac, and even appeared as his accuser, though he failed to establish his charges againt the sup-

pressor of the June insurrection. B. was at first in favor of Louis Napoleon, but the *coup d'état*, Dec. 2, and the overthrow of the constitution, compelled him to become an oppositionist. He then retired for a time from public life, and resigned his chair, but in 1862 he was reappointed. In 1869 he was returned to the corps législatif by the first circumscription of Seine-et-Oise; and, in 1871, to the assembly for the dept. of Seine-et-Oise. In 1875 he was elected a life-senator by the assembly, and he was minister of foreign affairs 1880-1. He d. 1895, Nov. 22.

His principal writings are his translations of Aristotle's works—*Politique d'Aristote* (Paris, 1837): *De la Logique d'Aristote* (1838); *La Logique d'Aristote*, translated into French for the first time (1839–44, 4 vols.); *Psychologie d'Aristote, Traité de l'âme* (1846); *De l'Ecole d'Alexandrie* (1845); *Rapport sur la Comparaison de la Philosophie Morale et Politique de Platon et d'Aristote, avec les Doctrines des plus grands Philosophes Modernes* (1854); *Des Védas* (1854); *Du Bouddhisme* (1855); *Mahomet et le Coran* (1865); and *De la Métaphysique, sa nature et ses droits* (1879); *Etude sur François Bacon* (1890).

BARTHOLDI, *bâr-tōl'dĕ*, Frédéric Auguste: sculptor: b. Colmar, Alsace, 1834, April 2—1904, Oct. 4. He removed to Paris, and first studied painting with Scheffer, but in a short time abandoned painting for sculpture, to which he has since applied himself. He made his first exhibit when 13 years old, and produced his *Francesca da Rimini* when 18. In 1856–58 he made an Oriental tour with Gêrome, and during the Franco-German war served in the army with the painters Regnault and De Neuville. His works include portrait busts of Erckmann and Chatrian; monument to Martin Schongauer; *La Malédiction d'Alsace; Le Vigneron; Vercingetorix; Lafayette Arriving in America; The Young Vine-grower; Génie Funèbre; Peace;* and *Genius in the Grasp of Misery*, contributed to the U. S. Centennial Exhibition; *The Lion of Belfort; Gribeauval;* and *Liberty Enlightening the World* (see Liberty, Statue of). He made several trips to the United States; suggested Bedloe's Island as the site for the colossal statue; was present at its dedication; and has received the cross of the Legion of Honor. In 1890 he protested against the proposed use of Bedloe's Island as an emigration depot, and suggested that it should be adorned with statues of great Americans.

BARTHOLIN, *bâr'to-lin:* name of a Danish family distinguished for learning and authorship, the members of which have filled many important offices, especially in the Univ. of Copenhagen.

Kaspar: 1585, Feb. 12—1629; b. Malmö; son of a minister: studied theology and philosophy at Rostock and Wittenberg, and afterwards studied medicine. In 1610, he was made doctor of medicine at Basle. He practiced for some time in Wittenberg, and 1613 accepted an invitation to be prof. of the Greek language and of medicine at Copen-

hagen, where, 1624, he became prof. of theology. He died at Sora. His *Institutiones Anatomicæ* (Wittenb., 1611, often reprinted), which were translated into the German, French, English, and Oriental languages, served in the 17th c., in many universities as a text-book for prelections. All his sons are known in the learned world, especially Jacob and Thomas.

JACOB: 1623–53; d. Heidelberg: the orientalist, known as the editor of the cabalistic works, *Bahir* and *Majan Hachochma.*

THOMAS: 1616, Oct. 20—1680, Nov. 4; equally celebrated as philologist, naturalist, and physician: became, 1647, prof. of mathematics, and, 1648, prof. of anatomy, at Copenhagen; demitted these offices 1661, and thereafter lived in retirement upon his estate of Hagestad. In 1670, the king appointed him his physician in ordinary. He enlarged the new edition of his father's Anatomy (Leyd. 1641; often reprinted) with a mass of new observations. Besides many other valuable anatomical and medical works, his works on biblical and other antiquities, and on natural philosophy, are particularly worthy of notice. He was one of the most learned and studious of physicians, and warmly defended Harvey's doctrine of the circulation of the blood.

KASPAR: 1654–1704; son of Thomas; was likewise an accomplished anatomist.

THOMAS: 1659–90; son of Thomas: author of a standard work on northern antiquities—the *Antiquitatum Danicarum Libri Tres* (Copenh. 1689); also of *De Causis Contemptæ a Danis adhuc gentilibus Mortis.*

BARTHOL'OMEW, SAINT: Caribbean island, bought by Sweden 1785 from the French West India Co., and acquired again by France through purchase 1878. It lies about 30 m. n. of St. Kitts, about 17° 40′ n. lat. and 63° e. long.; area only 8 sq. m. The soil is fertile, though, as is generally the case in the group, fresh water is scarce. Like most of its neighbors, St. B. is difficult of access, its only harbor (Le Carenage) being on its w. side, near the chief town Gustavia. Pop. abt. 3,000.

BARTHOLOMEW, *bâr-thŏl'o-mū,* SAINT: one of the twelve apostles, supposed to be the same person as Nathanael. He was a native of Galilee, but nothing authentic is known regarding his life and labors. According to the traditionary record of Eusebius, he carried Christianity into India; Chrysostom speaks of him as a missionary in Armenia and Asia Minor, while a still later legend declares that he was crucified at Albania Pyla, the modern Derbend, a town on the Caspian Sea. The relics of St. B. 'appeared' at Rome 983, and are preserved there in the church bearing his name. The Rom. Cath. and Anglican Churches hold a festival in his memory Aug. 24; the Greek Church, June 11. The primitive church possessed an apocryphal Gospel under his name, but it is now lost.

BARTHOL'OMEW'S (ST.) DAY (F. *La St.-Barthélemy;*

BARTHOLOMEW'S DAY.

Ger. *Bartholomäusnacht*, i.e., Bartholomew's Night, or *Bluthochzeit*, i.e., Blood-wedding): the appellation given to the massacre of the Protestants in Paris on the night of St. B. D., 1572, Aug. 24–25. After the death of Francis II., 1560, Catharine de' Medici (q.v.), as regent for her son, Charles IX., a minor, in order to annoy the Rom. Cath. party of the Duke Francis of Guise (q.v.), had granted an edict of toleration to the Reformed, at whose head was the Prince of Condé. Both parties took up arms, and there ensued a war which lasted eight years, the cruelties of which, through mutual exasperation, are almost incredible. The Duke Francis of Guise was murdered by an assassin, and the Prince of Condé was taken prisoner in the battle of Jarnac, 1569, and shot. The young Prince Henry of Bearn, afterwards King Henry IV., nephew of Condé, then became leader of the Reformed, with Admiral Coligny (q.v.). It was not till the strength of both sides was exhausted, that the peace of St. Germain-en-Laye was concluded, 1570, whereby the Reformed obtained the free exercise of their religion. Catharine de' Medici now expressed much friendliness towards the Reformed, and even endeavored to lull them into negligence by the marriage of the youthful Henry of Bearn, with her daughter Margaret, 1572, Aug. 18. Admiral Coligny was drawn to Paris, and the king not only made him costly presents, but gave him an important office in the council of state. However, all this was only the basest hypocrisy. When, by means of the marriage of Prince Henry, the most eminent of the Reformed had been allured to Paris, Admiral Coligny was wounded by a shot from the window of the palace 1572, Aug. 22. The king, indeed, hastened to him, and swore to avenge him; but, on the very same day, the king was persuaded by his mother that the admiral sought his life. 'By God's death,' he exclaimed, 'let the admiral be slain, and not him only, but all the Huguenots, till not one remain that can give us trouble.' That night, Catharine held a council, and appointed St. B. D. for carrying into effect the long-contemplated massacre. After Coligny had been murdered, a bell in the tower of the royal palace, at the hour of midnight, gave the signal to the assembled companies of citizens for the general massacre of the Huguenots. The king himself fired from his palace upon those that were fleeing past. The Prince of Condé and the King of Navarre only saved their lives by going to mass, and appearing to conform to the Rom. Cath. Church. The provinces were at the same time summoned to similar slaughter; and although in some of them the officials were ashamed to publish the murderous commands which had been transmitted to them, there were found bloodthirsty fanatics enough, who perpetrated the greatest horrors for several weeks together in almost all the provinces, so that it was reckoned that 30,000 (some authorities make the number 70,000) persons were murdered. The pope celebrated the events of St. B. D. by a procession to the

church of St. Louis, a grand *Te Deum*, and the proclamation of a year of jubilee. Many of the Huguenots fled to pathless mountains and to La Rochelle, to which the Duke of Anjou laid siege. Upon receiving intelligence, however, that he had been elected king of Poland, he made an arrangement 1573, July 6, according to which the king granted to the Huguenots an amnesty, and the exercise of their religion in certain towns.

BARTIZAN, n. *bar'tĭ-zăn'* [a corruption of BRATTICING, which see: OF. *bretesche*, a portal of defense—from mid. L. *brestachĭă*, a wooden defense at the entrance: It. *bertesca*, a kind of rampart]: a small over-hanging turret which projects on corbels from the angles of towers, or over doorways, or from the parapet and other parts of the building; generally in mediæval castles, for defense, sometimes only for convenience to the inmates.

BARTLETT, *bârt'lĕt*, ELISHA: American physician and author: b. Smithfield, R. I., 1805; d. there, 1855, July 18. He graduated from the medical department of Brown Univ. in 1826, and delivered the course of lectures on pathological anatomy at the Berkshire medical institute in Pittsfield, Mass., in 1832. In 1836 or 1837 he was elected the first mayor of Lowell. He subsequently lectured at Dartmouth College, and in Transylvania Univ. and the universities of Maryland and New York. In 1851 he became professor of materia medica and medical jurisprudence in the College of Physicians and Surgeons in New York, which place he held until his death. He published *Essay on the Philosophy of Medical Science* (1844); *Fevers of the United States* (1850); and a volume of poems, entitled *Simple Settings in Verse for Portraits and Pictures in Mr. Dickens' Gallery* (1855).

BARTLETT, EDWIN JULIUS, American chemist: b. Hudson, O., 1851, Feb. 16. He was graduated at Dartmouth College in 1872, and at Rush Medical College in 1879; made associate professor of chemistry in Dartmouth in 1879, and full professor in 1883. He is a member of the American Chemical Society, and the New York Medico-Legal Society, and an honorary member of the New Hampshire Medical Society. He is the author of many papers on chemical subjects.

BARTLETT, HOMER NEWTON, American composer: b. Olive, N. Y., 1846, Dec. 28. He began his public career when 9 years of age, and at 10 composed violin music, piano duos, songs, and vocal duets. He has written a large number of anthems, quartets, and glees for vocal rendering, and pieces for the flute, stringed instruments, and military bands and orchestras. His best compositions include a three-act opera, *La Valliere;* a cantata, *The Last Chieftain;* an oratorio, *Samuel*, etc.

BARTLETT, ICHABOD, American lawyer: b. Salisbury, N. H., 1786; d. 1853, Oct. 19. He graduated at Dartmouth College in 1808, commenced the practice of the

law in Durham, but soon removed to Portsmouth, where his skill and ability soon commanded success. He is celebrated as an opponent of Webster and Mason. He was frequently a member of the State legislature, and of the United States House of Representatives for three terms, 1823–9.

BARTLETT, John, American author and publisher: b. Plymouth, Mass., 1820, June 14; d. Cambridge, Mass., 1905, Dec. 3. He entered the university book-store, became a publisher in Cambridge in 1836, and senior partner in the house of Little, Brown & Company, in 1878. His works include: *Familiar Quotations* (1854; 9th ed. 1891); *New Method of Chess Notation* (1857); *The Shakespeare Phrase-Book* (1882); *Catalogue of Books on Angling, Including Ichthyology, Pisciculture, etc.* (1882); *The Complete Concordance to Shakespeare's Dramatic Works* (1894); and *Poems.*

BARTLETT, John R., American naval officer: b. New York, 1843; d. Saint Louis, 1904, Nov. 22. He was appointed an acting midshipman in the navy from Rhode Island in 1859; entered the United States Naval Academy, where he remained till the beginning of the Civil War, when he was assigned to the West Gulf Blockading Squadron. He took part in the bombardment and passage of Forts St. Philip and Jackson, and the Chalmette batteries, and the capture of New Orleans and attack on Vicksburg in June 1862. He was promoted lieutenant in 1864; took part in the bombardment of Fort Fisher in December, and the assault on its works in January. Subsequently he was on surveying duty in Nicaragua and on the United States Coast Survey; was promoted to captain 1892, July 1; and was retired 1897, July 12. After the declaration of war against Spain, in 1898, he was recalled to active service, and on July 9 succeeded Rear-Admiral Erben as commander of the Auxiliary Naval Squadron, organized for the protection of the Atlantic coast cities.

BARTLETT, John Russell, American author: b. Providence, R. I., 1805, Oct. 23; d. 1886, May 28. He was educated for a mercantile career, and after 1837 entered the book-importing trade in New York. In 1850, he was appointed one of the commissioners to determine the Mexican boundary. In 1855 he was made secretary of State of Rhode Island. He published various valuable records, genealogies, local histories, etc., but his best known work is his *Dictionary of Americanisms* (1850).

BARTLETT, John Sherren, Anglo-American journalist, founder of the *Albion* newspaper in New York: b. Dorsetshire, England, 1790; d. 1863, Aug. 24. He was educated as a physician in London; was appointed surgeon in the royal navy in 1812; sailed to the West Indies on board the packet *Swallow;* was captured by the American

frigates *President* and *Congress* under Commodore Rodgers, and remained a prisoner at Boston until discharged in 1813. At the close of the war he married a lady of Boston and established himself there as a physician. The *Albion*, commenced by him in New York 1822, June 22, as an English organ of conservative politics, gained a wide and profitable circulation. Bartlett subsequently commenced one or two other papers of a smiliar character at a cheaper price, and on the beginning of Atlantic steam navigation also established at Liverpool the *European*, a weekly compendium of the latest news for American circulation. Owing to the failure of his health, he withdrew from the *Albion* in 1848. He subsequently published the *Anglo-Saxon*, a weekly paper at Boston, which he continued about two years. In 1857 he served as English consul at Baltimore.

BARTLETT, Joseph, American wit, poet, and adventurer: b. Plymouth, Mass., 1763; d. Boston, 1827, Oct. 27. He began the study of law at Salem, but soon gave it up for a voyage to England. Here he pursued the career of an adventurer, gambled, spent, got into prison, wrote a play for his release, and went upon the stage himself. From an actor he became a merchant, and having sailed for America with a large supply of goods on credit, was shipwrecked on Cape Cod. In 1799 he delivered a poem on *Physiognomy* before the Phi Beta Kappa society of Harvard, satirical and clever, and said to touch upon the traits of individuals at the time. To the edition of this poem, published in 1823, were appended a number of *Aphorisms on Men, Principles, and Things*, the results of his various experience. The same year he delivered a Fourth of July oration at Boston, and afterward recited a poem, entitled the '*New Vicar of Bray*,' which obtained considerable celebrity. He next attempted the practice of law and of politics in Maine, was elected to the State legislature, and nearly secured an election to Congress by his active exertions as a speaker and newspaper writer. He then practised law at Portsmouth, N. H., and finally closed his improvident life, a burden to his friends, at Boston. See Duyckinck's *Cyclopædia of American Literature.*

BARTLETT, Josiah, American statesman: b. Amesbury, Mass., November 1729; d. 1795, May 19. He commenced the practice of medicine in 1750, at Kingston, and established a reputation, during the prevalence of the *angina maligna* in 1754, by treatment with Peruvian bark, in opposition to the usage of other physicians. He received several appointments from the royal governor, John Wentworth, but lost them in 1775, for being a zealous Whig. Being chosen delegate to the Continental Congress, he was the first who voted for, and the first, after the president, who signed the Declaration of Independence, his name being first called as representative of the most easterly province. He accompanied Stark in 1777 to Bennington.

He was appointed chief justice of the common pleas in 1779, justice of the supreme court in 1784, and chief justice in 1788. He was an active member of the convention called to adopt the Federal constitution in 1788. In 1790 he was president of New Hampshire, and in 1793 was chosen the first governor under the new State constitution. He was also president of the medical society established in 1791, by his exertions. In all his various offices his duties were ably and faithfully discharged.

BARTLETT, Paul Wayland, American sculptor: b. New Haven, Conn., 1865. He entered the École des Beaux Arts, Paris, 1880; became chevalier of the Legion of Honor, 1895. His principal works are: an equestrian statue of Gen. McClellan in Philadelphia; one of Lafayette in Paris (presented to France by the school children of the United States); a statue of Gen. Joseph Warren in Boston; statues of Columbus and Michel Angelo in the Library of Congress, and *The Bear Tamer* in the Metropolitan Museum of New York.

BARTLETT, Samuel Colcord, D.D., LL.D.: Congl. clergyman: b. Salisbury, N. H., 1817, Nov. 25. He graduated at Dartmouth College 1836, and Andover Theol. Seminary 1842. In 1843 he was pastor at Monson, Mass.; in 1846 prof. of intellectual philosophy at Western Reserve College, Hudson, O.; in 1852 pastor of a Congl. church at Manchester, N. H.; 1857 pastor at Chicago, Ill., and prof. of biblical literature in the Chicago Theol. Seminary (Congl.), which professorship he retained till 1859. In 1877 he was made pres. of Dartmouth College, Hanover, N. H., which office he resigned 1892. In 1874 B. crossed the desert of El Tih to Palestine, having in view the comparison, in detail, of all the circumstances and conditions of this region with the biblical narrative of the journey of the children of Israel. He has been a voluminous contributor to the *Bibliotheca Sacra*, the *New Englander*, and the *North American Review*, and has been in demand as an orator at centennial and other patriotic celebrations and at literary anniversaries. Among his published works are: *Life and Death Eternal: a Refutation of the Doctrine of Annihilation* (1866, 2d ed. 1878); *Sketches of the Missions of the A. B. C. F. M.* (1872); *Future Punishment* (1875); *From Egypt to Palestine: Observations of a Journey* (1879); and *Sources of History in the Pentateuch* (1883). D. 1898, Nov. 16.

BARTLETT, William Francis: milit. officer: 1840, Jan. 6—1876, Dec. 17; b. Haverhill, Mass. He was a student at Harvard, but went to the front, 1861, as capt. in the 20th Mass. He was at Ball's Bluff, and at Yorktown, 1862, lost a leg. He returned to Harvard, and, having graduated with his class, organized the 49th Mass., and was made its col. He accompanied Gen. Banks' expedition and at Port Hudson was twice wounded. He organized the 57th Mass., fought in the Wilderness, being promoted

brig.gen., and was again wounded. Returning to duty as soon as he could ride, he was taken prisoner at Petersburg, 1864, July 30; was confined in Libby prison, exchanged in a few weeks, given command of the 9th army corps, and brevetted maj.gen. At the close of the war he connected himself with the Tredegar iron works, Richmond, Va., but eventually settled in Pittsfield, Mass., where he died, widely lamented.

BART'LETT, William Henry: 1809, March 29—1854, Sep. 25; b. Kentish Town, London. He made drawings for Britton's *Cathedral Antiquities*, also for his *Picturesque Antiquities of English Cities*. B. visited the continent, the Holy Land, and America, several times, enriching his portfolio with innumerable scenes. Nineteen quarto volumes, containing about 1,000 engravings from his sketches, and letterpress from his own pen and those of his fellow-travellers, Dr. W. Beattie, N. P. Willis, and Miss Pardoe, were devoted to these countries. Several other volumes, of which he was the sole author as well as artist, have also been published. Some of his books had a wonderful success, especially those on Switzerland, the Holy Land, and Egypt. B. died on the voyage from Malta to Marseilles.

BARTLETT, William Holmes Chambers, American soldier and scientist: b. Lancaster County, Pennsylvania, 1809; d. 1893, Feb. 11. He was educated at West Point, and as lieutenant of engineers, was assistant professor there, 1827–9. He was engaged on the construction of Fort Munroe and Fort Adams; was assistant engineer at Washington, 1832–4; and again at West Point as assistant professor, 1834–6. When he resigned his lieutenancy in 1836, he was made full professor of philosophy at West Point, and held this position until he retired in 1871. He was a member of the Natural Academy of Sciences and other scientific societies, and wrote several scientific books, including *Treatise on Optics* (1839); *Synthetical Mechanics* (1850–8); *Acoustics and Optics* (1852–9); *Analytical Mechanics* (1853–9); and *Spherical Astronomy* (1858–9).

BARTLEY, *bârt'lĭ*, Elias Hudson, American chemist: b. Bartleyville, N. J., 1849, Dec. 6. He was graduated at Cornell University in 1873; was an instructor there in 1874–5; professor of chemistry at Swarthmore College, 1875–8; lecturer at the Franklin Institute, Philadelphia, in 1877–8. He removed to Brooklyn in 1879; graduated at Long Island College Hospital in 1879; was lecturer there on physiological and practical chemistry in 1880–5; and then became professor of chemistry and toxicology. He was made chief chemist of the health department of Brooklyn, in 1882. He is the author of several articles in Wood's *Household Practice of Medicine* (1885), and of *A Text-Book of Medical Chemistry*.

BARTOK, *bâr'tŏk*, Ludwig von, a Hungarian poet and

dramatist: b. 1851. *Carpathian Songs* includes his happiest verse. As a playwright, he is even more distinguished; the comedy of *The Most Beautiful* (1880), and the historical tragedy, *Margareta Kendi*, as well as *Anna Thuran*, a historical drama, having been frequently acted.

BAR'TOL, *bâr'tŏl*, CYRUS AUGUSTUS, D.D.: Unit. clergyman: b. Freeport, Me., 1813, Apr. 30. He studied at Bowdoin College, where he graduated 1832; also graduated at the Cambridge Divinity School 1835. In 1837 he became colleague pastor with the Rev. Charles Lowell, D.D., in the West (Unitarian) Church, Boston. He became sole pastor 1861, and held the same pulpit till 1888. He was known as a poet and essayist, and as a keen and powerful writer and preacher on political and other public questions. Among his works are: *Discourses on the Christian Spirit and Life* (1850, second ed. 1854); *Discourses on the Christian Body and Form* (1854); *Pictures of Europe Framed in Ideas* (1855); *History of the West Church and its Ministers* (1858); *Church and Congregation* (1858); *Radical Problems* (1872); *The Rising Faith* (1874), and *Principles and Portraits* (1880). D. 1900, Dec. 17.

BARTOLINI, *bâr-to-lē'nē*, LORENZO: 1777–1850; b. Vernio, Tuscany: celebrated Italian sculptor. In Paris he practiced his art for some time with little pecuniary success; but at length won great fame and prosperity. He obtained a commission to execute one of the bas-reliefs in the hall of the Vendôme palace, and also the bust of Napoleon over the door of the institute of France. Napoleon himself gave him a multitude of orders, many of which, unfortunately, were never executed. In 1808, the emperor sent him to Carrara, to establish a school of sculpture. Here he remained till 1814; when he accompanied his imperial master to Elba. After the battle of Waterloo, till his death, he resided in Florence, where he was director of the sculpture department in the Acad. of the Fine Arts. Among B.'s multitude of works were busts of Cherubini, Mehul, Madame Regnauld, a magnificent statue of Napoleon I. (now in the United States), several exquisite sepulchral monuments, such as that of Lady Stratford Canning in the cathedral of Lausanne, and various groups, the most celebrated of which are his *Charity*, and *Hercules and Lycus*. In England and France, his style is in general greatly esteemed; in Germany, it is less highly thought of. His figures are characterized by their truthfulness of proportion and classic repose, though they have also a remarkably lifelike expression. After Canova, B. is reckoned the most distinguished Italian sculptor of modern times.

BARTOLOMMEO, FRA: see BACCIO DELLA PORTA.

BARTOLOZZI, *bâr-to-lot'sē*, FRANCESCO: 1727–1815, March 7; b. Florence; eminent engraver. After executing at Rome his admired plates from the life of St. Vitus, he was induced to settle in England, where he produced his spirited and highly finished engravings of the *Virgin and*

Child after Carlo Dolci, and *Clytie* after Annibale Carracci, which entitled him to the front rank in his profession. He engraved numerous specimens of the works of his friends Giovanni Cipriani, of Michael Angelo, Cantarini, Cortona, etc.; and enriched Alderman Boydell's Shakespeare gallery with many fine engravings. In 1805, in his 78th year, on invitation of the prince regent of Portugal he went to Lisbon as supt. of a school of engravers. There he died. He was grandfather of Madame Vestris, the comedian. See *B. and his Works*, by Tuer (1882).

BAR'TOLUS, Osso, or Bartolus A. Saxofferrato, a celebrated Italian jurist: b. Sasso Ferrato, in the Marches of Ancona, about 1313; d. Perugia, 1356. He took his degree of doctor of law at Bologna, became professor, first at Pisa, and then at Perugia, was ennobled and honored with other distinction and privileges by the emperor Charles IV., and not only published many important works such as treatises *On Procedure*, *On Evidence*, and commentary on the *Code of Justinian*, but distinguished himself in various other branches of knowledge.

BARTON, n. *bâr'tŏn* [AS. *beretún*, a courtyard—from *bere*, barley; *tún*, a plot of ground inclosed by a hedge]: in *OE.*, the demesne inclosures of land attached to a manor; the yards and outhouses of a residence.

BARTON, Benjamin Smith, American naturalist: b. Lancaster, Pa., 1766, Feb. 10; d. Philadelphia, 1815, Dec. 19. He studied the natural sciences and medicine in Philadelphia, Edinburgh, and London, and took his degree at Göttingen. He practised meidcine in Philadelphia, and held successively the chairs of botany and natural history, materia medica, and theory and practice of medicine in the university there. He became president of many learned societies, was a correspondent of Humboldt, and, among other works, wrote *Elements of Botany* (1812–14); *Collections for an Essay toward a Materia Medica of the United States* (3d ed. 1810); and *Flora Virginica* (1812).

BARTON, *bâr'ton*, Bernard: 1784, Jan. 31—1849, Feb. 19; b. Carlisle, Eng.: English poet. His parents were members of the Society of Friends, to which body B. adhered through life. In 1810 he became clerk to a banking-house at Woodbridge, in which situation he continued until within two years of his death. His first poetical efforts were published 1812 under the title of *Metrical Effusions. Poems by an Amateur* (1818), and *Poems* (Lond. 1820), increased his reputation, and gained him the friendship of Lamb and Byron. *Napoleon and Other Poems* appeared 1822, followed within five years by several other productions. All the poems of B. are pervaded by pious sentiment, and some passages display much natural tenderness and religious fervor, but he is, on the whole, rather a fluent, pleasant versifier than a poet. Some years before his death, he received, through Sir Robert Peel, a pension of £100 sterling. In addition to the works mentioned, he published *Fisher's Juvenile Scrap-book* (Lond. 1836), *The Reliquary*

(Lond. 1836), and *Household Verses* (Lond. 1845). After his death, his daughter published *Selections from the Poems and Letters of Bernard Barton* (Lond. 1849).

BARTON, Clara: philanthropist: b. Oxford, Mass., about 1830; daughter of Capt. Stephen B. She was educated at Clinton, N. Y., and early in life became a teacher, and established the first free school in N. J., opening at Bordentown with six pupils. She held a clerkship in the patent office, Washington, from 1854 till the outbreak of the Civil War, when she gave her services to the care of wounded soldiers on the battle-field. After the war closed, she devoted some time, at her own expense, and later as the agent of the government, to the search for the missing. She lectured on her war experiences 1866–7, then went to Switzerland. She aided the Grand Duchess of Baden to establish hospitals at the breaking out of the Franco-Prussian war, and superintended the supplying of work to the poor of Strasburg after the siege 1871. Her services won her the decoration of the golden cross of Baden, and the iron cross bestowed by the German emperor. She was in charge of the distribution of public supplies to the destitute of Paris 1872. On the organization of the American Red Cross Society, 1881, she became its pres., and had charge of the relief expedition in behalf of the sufferers from the floods of the Ohio and Mississippi rivers 1884; also of that in behalf of the Johnstown sufferers, 1889, June. She was the govt. representative at the Red Cross conference, Geneva, Switzerland, 1884; also delegate to the international peace convention at the same place, the same year; besides being special commissioner for foreign exhibits at the New Orleans Exposition 1883. In 1892 distributed relief to the Russian famine sufferers; in 1896 personally directed relief measures at the scenes of the Armenian massacre; in 1898, at Pres. McKinley's request, took relief to the Cuban revolution and was on the field during the war with Spain. In 1900, her health failed while extending relief to Galveston sufferers and, in 1904, she resigned from the Red Cross Society. She has published *History of the Red Cross* (1883); *History of the Red Cross in Peace and War* (1898); *Story of Red Cross* (1904).

BARTON, Elizabeth, commonly called 'the Holy Maid of Kent': a wretched creature subject to spasmodic nervous affections, during which she gave utterance to incoherent exclamations and phrases. About 1525, she was servant in a tavern at Aldington, Kent; and a cunning priest conceived the idea of presenting her as a prophetess. She played her part so well that even men of intellect and education like Sir Thomas More and Barham, Abp. of Canterbury, were deceived. Her true character becoming known she became a nun, and when, in 1532, Henry VIII. quarreled with the court of Rome, she was induced to denounce loudly the king's separation from his first wife, and his marriage with Anne Boleyn, and even to prophesy

his death. Being arrested by the king's command, with her accomplices, she made a confession of the fraud, and was sentenced to ecclesiastical penance and to imprisonment. Afterward accused of high treason, she was put to death with some of her accomplices in 1534.

BARTON, George Hunt, American geologist: b. Sudbury, Mass., 1852, July 8. He was assistant on Hawaiian Government survey, 1881–3; assistant in geology in the Massachusetts Institute of Technology in 1883–4; till 1904 assistant professor of geology there; he also occupied the corresponding chair in Boston Univ. till 1904 and since then has heen curator at the Teachers' School of Science; and was assistant geologist of the United States Geological Survey. In 1896 he was a member of the sixth Peary expedition to Greenland. He is a member of the Boston Society of Natural History, the National Geological Society, and the Geological Society of America, and the author of many technical papers.

BARTON, William, American military officer: b. Warren, R. I., 1748, May 26; d. Providence, R. I., 1831, Oct. 22. He joined the Revolutionary army soon after Bunker Hill, and on the night of 1777, July 10, he performed the exploit which made him famous. Leading a small party of men, in four whale-boats, across Narragansett Bay, he surprised and captured the British general, Prescott, at his headquarters, and hurried him away to Washington's camp in New Jersey. Barton received a sword from Congress, and was brevetted colonel. He was afterward a member of the State convention which adopted the Federal Constitution.

BARTON, William Paul Crillon, American botanist: b. Philadelphia, Pa., 1786, Nov. 17; d. 1856, Feb. 29; a nephew of Benjamin Smith Barton (q.v.). He was educated at Princeton College, and in the medical school of the Univ. of Pennsylvania; was surgeon in the United States navy and became professor of botany in Jefferson Medical College, in 1815. He was author of *Flora of North America* (1818–24); *Vegetable Materia Medica of the United States* (1817–25); *Compendium Floræ* (1818).

BAR'TON BEDS: a group of strata, composed of clay and sand, and forming part of the Middle Eocene formation, included in the Bagshot series (q.v.).

BARTONIA, n. *bar-tō'nĭ-a* [after *Dr. Barton*, an American botanist]: genus of plants belonging to order *Loasaceæ*, or Loasads. The species are fine plants, with large, white odoriferous flowers. Also, a genus of *Gentianaceæ*.

BAR'TRAM, John, an eminent American botanist: b. Chester county, Pa., 1699, March 23; d. 1777, Sept. 22. He is frequently called the 'father of American botany,' and he founded at Kingsessing the first botanical garden in America. Linnæus termed him 'the greatest natural botanist in the world.' He published *Observations of the*

Inhabitants, Climate, Soil, Diverse Productions, Animals, etc., Made in His Travels from Pennsylvania to Lake Ontario, and a similar volume on eastern Florida (1766). He was in constant correspondence with European botanists, to whom he sent large collections of American plants and would readily undertake a journey of a hundred miles to see a new plant.

BARTRAM, William, American botanist and ornithologist: b. Kingsessing, Pa., 1739, Feb. 9; d. there 1823, July 22; a son of John Bartram. He spent five years in the southern states studying natural history, and published the results in *Travels Through North and South Carolina and East and West Florida.* He compiled a list of American birds, which was the best of its kind up to the time of Wilson.

BARTSCH, *bârtsh,* Adam von, Austrian engraver and art writer: b. Vienna 1757, Aug. 17; d. there 1821, Aug. 21. At the age of 16 he brought himself into the notice of the Austrian government by a series of engravings of the gold and silver medals issued during the reign of Maria Theresa, and, in 1781, was appointed keeper of the prints of the royal collection. In 1803 he produced the first volume of his well-known and authoritative work, *Le Peintre-Graveur,* in 21 volumes, giving a description of the principal engravers of Europe, and criticisms on their works. He etched upward of 500 pieces, and published several catalogues of works of art.

BARTSCH, Karl Friedrich Adolf Konrad, German philologist: b. Sprottan, Silesia, 1832, Feb. 25; d. 1888, Feb. 19. He was professor at Rostock, where he established the earliest Germanic seminary in Germany, 1858–71; and for the remainder of his life was head of the department of German and Romance philology at the Univ. of Heidelberg. He was an extremely brilliant, versatile, industrious scholar whose attention was chiefly given to Middle High German and Provençal poetry, and was an original poet also, publishing a volume of lyrics in 1874. Beside an important study of the *Nibelungenlied* (1865), he published *The Song of Roland* (1874); a translation of Burns (1865); and of Dante's *Divina Commedia* (1867), as well as introductions to the study of Provençal and old French, etc.

BARTSIA, n. *bärt'sĭ-a* [after *Dr. Bartsch,* a Prussian botanist]: genus of plants belonging to order *Scrophulariaceæ,* or Figworts. Calyx four-cleft; there is no lateral compression of the upper lip of the corolla, while the lower lip has three equal reflexed lobes.

BARU, *bâ'rô:* fine woolly substance found at the base of the leaves of the *Saguerus saccharifer* (also called *Arenga saccharifera*), one of the most valuable sago-palms of the Indian archipelago. It is much employed in calking ships, in stuffing cushings, and for other similar purposes.

BARUCH, *bā'rŭk* [i.e., the Blessed]: son of Neriah, the

person to whom the prophet Jeremiah dictated his oracles. During the siege of Jerusalem by Nebuchadnezzar, both he and the prophet were, by their own countrymen, shut up in a narrow prison, but obtained from the conqueror freedom and permission to choose their own residence. B. remained for some time in Palestine, but afterwards accompanied Jeremiah to Egypt. His subsequent history is unknown. An apocryphal work in the Greek language has come down to us under his name—viz., the Book of B., which contains words of comfort for the Israelites, and predicts the rebuilding of Jerusalem. There is usually appended to it, as chapters vi. and vii., a letter—also apocryphal—of the prophet Jeremiah to the exiles in Babylon.

BAR-WISE, n. *bâr'wīz:* in *her.*, horizontally arranged in two or more rows.

BA'RUS, Carl Hazard, American physicist: b. Cincinnati, O., 1856, Feb. 19. He studied at Columbia College and the Univ. of Würzberg; was physicist of the United States Geological Survey in 1880–92; professor of meteorology in the United States Weather Bureau, 1892–3; and physicist of the Smithsonian Institution, in 1893–5. In 1895, he became professor of physics at Brown Univ. He is a member of the National Academy of Sciences; was vice-president and chairman of the section of physics in the American Association for the Advancement of Science in 1897; and is a corresponding member of the British Association for the Advancement of Science. He contributes to the American Journal of Science, and has written also valuable monographs for the United States Geological Survey.

BARWOOD, n. *bâr'wûd:* a red dyewood brought from Africa; camwood; the *Baphiă nĭtĭda*, ord. *Lĕguminōsæ*, sub-ord. *Cæsalpĭnīĕæ*. See Camwood.

BARY, *bâ're*, Heinrich Anton de, German physician and botanist: b. Frankfort-on-the-Main, 1831, Jan. 26; d. 1888, Jan. 19. He is noted for his investigations in cryptogamic botany, and was professor of botany at Freiburg in 1855, at Halle in 1867, and at Strasburg in 1872. Among his works are *Die Mycetozen* (1859); *Vergleichende Morphologie und Biologie der Pilze, Mycetozen und Bacterien* (1884); *Vorlesungen über Bactorien* (1885).

BARYCENTRIC, a. *băr-ĭ-sĕn'trĭk* [Gr. *barus*, heavy; *kentrikos*, of or from the centre]: pertaining to the centre of gravity. Barycentric Calculus, a kind of calculus designed to apply the mechanical theory of the centre of gravity to geometry. It was first published by Möbius, professor of astronomy at Leipsic. It is founded on the principle of defining a point as the centre of gravity of certain fixed points to which co-efficients or weights are attached. It has now been superseded by the method of trilinear and quadrilinear co-ordinates, to which it led the way.

BARYE, *bâ-rē'*, ANTOINE LOUIS: French artist, especially in bronze; 1795, Sep. 24—1875, June 25; b. Paris: apprenticed to brass-work and jewellery, and for a time was in Napoleon's army as map-maker, afterward a student of art, and patronized by Louis Philippe. He was laborious in his studies, especially of animal forms and action, but combined the ideal with his scientific realism, and is the acknowledged master in his sphere. More than half a century ago, his colossal bronze lion and serpent in the Tuileries gardens was sneered at as the work of an 'animalist;' but, before his death, he was elected to the French Institute. Among his works are: a colossal lion before the gateway of the Prefecture of the Seine; a lion in relief on the Bastile column; an equestrian statue (at Ajaccio, Corsica) of Napoleon I., and statuettes of Napoleon as gen. and as first consul; four gigantic animals at the Château d'Eau, Marseilles; and, in the Tuileries, statues and various animal pieces; also large human and other figures in the Louvre. Wm. T. Walters of Baltimore has a fine collection of B.'s work, including oriental subjects, and has given to that city four allegorical groups, *War, Peace, Force, Order*, placed in a public square. Other collections, in New York, are those of C. J. Lawrence, T. K. Gibbs, and Mrs. W. T. Blodgett. Hunting-scenes, and conflicts between all sorts of animals, abound in this artist's multitudinous work; and there are some classical fables represented—e.g., Theseus battling with monsters.

BARYECOIA, *băr-ĭ-ĕ-koy'â* [Gr. *barus*, heavy; *akoueni*, hearing]: defective power of hearing; deafness.

BARYGLOSSIA, *băr-ĭ-glŏs'ĭ-â* [Gr. *barus*, heavy; *glossē*, tongue]: partial paralysis of the tongue; thickness of speech; difficulty of speech.

BARYLALIA, *băr-ĭ-lā'lĭ-â* [Gr. *barus*, heavy; *lalein*, speak]: difficulty of enunciating; barryphonia.

BARYLITE, *băr'ĭ-līt* [Gr. *barus*, heavy; *lithos*, stone]: silicate of aluminium and barium, occurring in white cleavable masses; found in Sweden.

BARYPHONIA, n. *băr-ĭ-fō'nĭ-a* [Gr. *barus*, heavy; *phōne* a sound, the voice]: in *med.*, heaviness, i.e. hoarseness of voice.

BARYSTRONTIANITE, n. *băr-ĭ-strŏn'shĭ-an-īt* [Eng. *baryta*; *strontian*]: a mineral, called also Stromnite, a variety of Strontianite.

BARYTA, symbol BaO, n. *bă-rī'tă* or *bâr'ĭ-tă*, or BARYTES, n. *bă-rī'tēz* [Gr. *barus*, heavy; *barŭtēs*, weight, heaviness. F. *baryte*]: the oxide of the metal barium, forming one of the alkaline earths; the earth present in the minerals *witherite* (barium carbonate) and *heavy spar* (barium sulphate). It may be prepared in several ways: 1. By acting upon barium carbonate, $BaCO_3$, by nitric acid, HNO_3, which causes the disengagement of the carbonic acid, CO_2, and the nitric acid combining with barium forms the barium nitrate, $Ba(NO_3)_2$. On evaporating the latter

substance to dryness, and igniting the residue, the nitric acid volatilizes, and leaves the baryta, BaO. 2. Another mode is to act upon a solution of sulphide of barium, BaS, by the black oxide of copper, CuO, when an interchange of the metals occurs, the sulphur uniting with the copper, producing sulphide of copper, CuS, and the oxygen with the barium, forming B., BaO, which remains dissolved in the water, and, on evaporation, deposits crystals in the hydrated condition, BaH_2O_2, $8H_2O$. B. belongs to the group of alkaline earths, and has the property of acting like an Alkali (q.v.) on coloring matters. It has a very harsh taste, is highly caustic, and is very poisonous. A solution of B. is used by the chemist as the best indication of the presence of carbonic acid gas in the atmosphere, for when a plate or other vessel containing the solution is exposed to the air, the carbonic acid floating across the surface combines with the B. and forms a film of white carbonate of barium, $BaCO_3$. The compounds of B. are, however, of considerable importance.

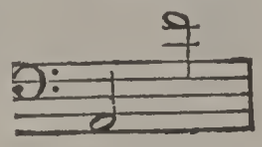
Barium sulphate, $BaSO_4$ (BaO 65.7 per cent., SO_3, 34.3 per cent.), otherwise called *heavy spar,* is found in the mineral kingdom, diffused in fissures or cracks, passing through other rocks, especially in Cumberland, Durham, and Westmoreland, and in the island of Arran. Extensive deposits of Barite are found in the U. S.—Gaston and Madison Counties, N. C., Richland, Va., Washington Co., Mo., and in Tennessee, Kentucky, Connecticut and Illinois. At the latter place, an extensive mine of heavy spar has been worked for many years. In its native condition, barium sulphate occurs of a crystalline texture, is sometimes found pure and white, but generally presents a flesh-red color, from the red oxide of iron (rust) incorporated in it. Riddance of the rust is had by reducing barium sulphate to a fine powder under rollers or travelling-wheels, and subjecting the pulverized material to the action of dilute sulphuric acid, which dissolves the red oxide of iron and leaves the barium sulphate as a dense white powder. The principal use of *heavy spar* is as a pigment under the name of *permanent white,* but having little opacity, it cannot be employed by itself, but only when mixed with ordinary white lead. When added to the latter, however, it must be regarded as an adulteration, for the little opacity it possesses renders it of service only as an increaser of the bulk of the white lead. Several mixtures of barium sulphate and white lead are manufactured, and are known in commerce. *Venice White* contains 1 part barium sulphate and 1 part white lead. *Hamburg White* contains 2 parts sulphate and 1 part white lead. *Dutch White* contains 3 parts sulphate and 1 part white lead. See BARIUM.

BARYTIC, a. *bă-rĭt'ĭk,* of or containing baryta.

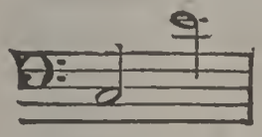
BARYTO-CALCITE, n. *bă-rī'tō-kăl'sīt,* $BaCaCO_3$ a calcite, $CaCO_3$ (q.v.), in which the metal barium has displaced a part of the calcium.

BARYTONE, or BARITONE, a. *băr'ĭ-tōn* [It. *baritono*—from Gr. *barus,* heavy; *tonos,* a tone]: pertaining to a grave

deep sound: N. a male voice between tenor and bass, with the tone-character more allied to the bass.

The compass of a B. voice is from 

but the principal notes of the voice are from

 ; and these should possess the energetic

character of a bass voice, and, above all, be produced from the chest, excepting perhaps the highest. In former times, the music for this species of voice was written on a staff

with the F clef placed on the 3d line, thus·

BARZONI, *bard'zo-nē*, VITTORIO: 1768–1829; b. Lonato; an Italian political and historical writer. Reared at Brescia in the ideas of the old regime, he not only failed to be suddenly converted, as so many others, to the principles proclaimed by the French revolution, but became, on the contrary one of its most violent opposers. Seeing in that immense social renovation only the dark side of the excesses committed, and unfortunately inevitable in such crises, he published, 1794, under the title of the *Recluse of the Alps*, a pamphlet in the form of a dialogue, in which he made a passionate attack upon the revolution. His hostility deepened into hatred when he saw the French successfully invade Italy, and make it the theatre of a bloody and devastating war, and especially when, the following year, Gen. Bonaparte, after having gained possession of Venice delivered that city to the Austrians, by the treaty of Campo-Formio (1797). Profoundly indignant, he published a pamphlet entitled the *Romans in Greece* (1797), which produced a great sensation throughout Italy. It designated Napoleon under the name of Flaminius, the Emperor Francis II. under that of King Philip, and the Italians as the oppressed Greeks. Bonaparte ordered his arrest and the burning of all the pamphlets that could be found. B. also published the *Carthaginians* (1805); *Discrizioni* (1814); the *French Revolution* (1799), in which are some curious facts; and *Motives of the Rupture of the Treaty of Amiens* (1804). All the works of this author, blinded very often by a partisan spirit, abound in incorrect assertions and impassioned declamation.

BAS, *bâs*, or BATZ, *bâts:* small island in the English Channel, belonging to France; off the n. coast of the dept. of Finistère; length about 3 m., breadth 2. It has a lighthouse, lat. 48° 45′ n., long. 4° 1½′, w., on a height 223 ft. above the sea. It is defended by two forts and four batteries. Pop. above 1,000, whose chief occupation is fishing.

BASAL, a *bā'săl:* see under BASE 2.

BASALT, n. *bă-sawlt'* [Gr. and L. *basal'tes;* Ethiopic, *basal,* iron; F. *basalte*]: a rock, grayish-black, eruptive in its origin; popular name for trap forming columns or prisms, three, five, or more sided, regular and jointed. BASALTIC, a. *bă-sawl'tĭk,* pertaining to or containing basalt. BASALTINE, *bă-sawl'tĭn,* synonym of augite. BASALTIFORM, a. *bă-sawl'tĭ-fawrm* [L. *forma* shape]: resembling basalt in its columnar structure. BASALTOID, a. *bă-sawl'toyd,* presenting the appearance of basalt; having basalt in its composition. BASALTING, making from the scoriæ of blast-furnaces blocks suitable for paving or for building. BASALT WARE, stoneware of dull glossy black color, first made by Wedgewood.—*Basalt,* a class of rocks belonging to the volcanic series and characterized by augite and plagioclase feldspar as essential constituents, and by iron ores (magnetite and ilmenite) as accessory minerals. Olivine is also present in typical basalts; among the rarer minerals are orthorhombic pyroxene, black mira, hornblende, quartz, leucite, and nepheline. Those varieties which contain notable quantities of olivine are known as olivine basalts, while the presence of leucite and nepheline characterizes the leucite basalts and the nepheline basalts. In texture the basalts vary from a finely crystalline apparently homogeneous mass to coarsely crystalline aggregates; but the normal type is a fine-grained, black rock, in which olivine is the only mineral that can be recognized without the microscope.

Basalt Section.

The ground mass of the denser varieties contains more or less glass, due to the rapid cooling of the magma from the molten state. Basalts are extremely abundant especially in those regions which have undergone volcanic disturbance within geologically recent times; in fact most of the volcanoes of the present day erupt basaltic materials. In the United States they occur mostly in the region west of the Mississippi River, where great areas have been flooded by fissure eruptions. The tendency of basalt to assume a columnar structure often lends a characteristic appearance to scenery, as is illustrated by the famous Giants' Causeway on the north coast of Ireland; and on the Columbia river; less distinctly in the Palisades and the Orange Mts., N. J., and in the Holyoke range, Mass., etc. These structures are called 'basaltic columns;' they have usually from five to seven sides. They are frequently divided transversely by joints at nearly equal distances. The direction of the columns is always at right angles to the greatest extension of the mass, so that when B. occurs as a bed, either overlying, or interstratified with the regular strata, the columns are perpendicular, while they are horizontal when the B. exists as a dike.

BASANITE, n. *băz'ăn-īt* [Gr. *băsanīzō*, I test; *basănos*, a touchstone]: a mineral—called also LYDIAN STONE OR LYDITE, from the province of *Lydia*, where first found; a compound variety of flinty slate of a velvet-black color, used for testing the purity of gold and silver—seldom used in this way now; is a flinty jasper, often called Touchstone and more or less crystals of augite.

BASANTGANJ': walled town of India, in the chief commissionership of Oude, 55 m. n.w. from Allahabad. Pop. 6,000, of whom one-half are Mussulmans.

BAS BLEU, n. *bâ blô* [F. *bas*, stocking; *bleu*, blue]: see BLUE-STOCKING.

BAS-CHEVALIER, *bâ-shĕ-vâ-lēr'* [Fr. *bas*, low, *chevalier*, knight]: knight of low degree; one by the bare tenure of a military fee; called *low*, or *inferior*, as compared to a banneret or a baronet. This supposed inferior grade of knights is a fiction of imagination, and is the result of a false etymological explanation of the word 'bachelor,' as though it were a corruption of *'bas-chevalier.'* See BACHELOR.

BASCINET: see BASENET.

BASCOM, *băs'kom*, HENRY BIDLEMAN, D.D., LL.D.: 1796, May 27—1850, Sep. 8; b. Hancock, N. Y.: Meth. Episc. clergyman. He received a scant education; was licensed to preach before he was 18 years old; labored on the frontier of O. and Tenn.; was appointed chaplain to congress 1823; was pres. of Madison College, Penn., 1827–8, agent of the Colonization Soc. 1829–31, and prof. of moral science and belles-lettres at Augusta College, Ky., 1831–41; and was chosen pres. of Transylvania Univ., Ky., 1842. He was a delegate to the convention which organized the Meth. Episc. Church, South, 1845, and chairman of the committee on adjustment of the differences between the two branches of the church; was appointed editor of the *Southern Methodist Quarterly Review* 1849; and was elected bp. the same year and ordained three months before his death. He published several collections of sermons and lectures.

BASCOM, *băs'kom*, JOHN, D.D.: educator: b. Genoa, N. Y., 1827, May 1. He graduated at Williams College 1849, and at Andover Theol. Sem. 1855. In 1852–3 he was a tutor in Williams College, and 1855–74 was prof. of rhetoric in the same institution. In 1874 he was made pres. of the Univ. of Wis., occupying also the chair of mental and moral philosophy. He resigned both these offices 1886, June 23. B. wrote: *Political Economy* (1859); *Æsthetics, or the Science of Beauty* (1862, revised ed. 1881); *Rhetoric* (1865); *Principles of Psychology* (1869, revised ed. 1877); *Science, Philosophy, and Religion*, Lowell Lectures (1871); *A Philosophy of English Literature* (1874); *Philosophy of Religion, or the Rational Grounds of Religious Belief* (1876); *Comparative Psychology, or Growth and Grades of Intelligence* (1878); *Ethics, or Science*

of Duty (1879); *Natural Theology* (1880); *Science of Mind* (1881); *The Words of Christ as Principles of Personal and Social Growth* (1884); *Problems in Philosophy* (1885); and *Sociology* (1887); *Historical Interpretation of Philosophy* (1893); *Growth of Nationality in the United States* (1899); *God and His Goodness* (1901).

BASCULE, *băs'kūl* [F. *bascule,* formerly *bacule,* see-saw; prob. from *battre,* to hit, to bump, and *cul,* fundament]: balancing lever. BASCULATION [F. *basculer,* to swing, to see-saw]: movement that swings back into the normal position a retroverted uterus. BASCULE-BRIDGE, a lift-bridge that is balanced, distinguished from a balance bridge (q. v.). The bascule-bridge has an overhang that swings down into the abutment when the bridge floor rises to open the draw.

BASE, a. *bās* [*F. bas,* mean, low—from It. *basso;* L. *bassus;* Gr. *bathus,* deep]: low and deep; mean; worthless; vile; of low station; deep; grave; inferior, as a metal other than silver or gold. BASE'LY, ad. *-lĭ,* in a base or dishonorable manner. BASE'NESS, n. vileness; worthlessness; in *OE.,* bastardy. BASES, n. plu. *bā'-sēs,* in *OE.,* a kind of mantle or skirt extending from the middle to the knees, or lower, forming the lower part of the dress; the stockings. BASE-BORN, a. born out of wedlock; vile.

BASE, n. *bās* [F. *base*—from L. and Gr. *basis,* the foundation—from Gr. *baino,* I go—*lit.,* what one walks upon]: the bottom part of a thing; the foundation, especially, the lower course or slab of a foundation; a chemical compound capable of uniting with an acid to form a salt. (See next page.) In pharmacy, an ingredient, as of an ointment, that contains the essential principle; popularly, anything that serves as a basis, on which a reasoning, a calculation, etc., can be formulated; in surveying, a base-line (see below); in military use, a principal station for supplies, as for an army. V. To found or establish on a base. BA'SING, imp. BASED, pp. *bāsd.* BASAL, a. *bā'săl,* forming the base; fundamental. BASIC, a. *bā'sĭk,* pertaining to a base; hence, fundamental. BASELESS, a. *bās'lĕs,* without foundation. BASILAR, *bās'ĭ-lėr,* in *bot.,* attached to the base of an organ. BASIS, n. *bā'sĭs* [L.]: the pedestal of a column; that on which anything is raised: plu. BASES, *bā'sēs.* BASE-BOARD, n. a board run along the side of a room at the foot of a wall, to give it a finish. BASE-BURNER, n. a stove that burns the fuel in the base, the fuel being fed into a chamber above and descending by gravity. BASE-COURSE, n. the lowest course of bricks, stone, etc., in a wall; also a course run on top of a foundation-wall, but below the wall proper. BASE-COURT, n. a lower court or stable-yard adjacent to a feudal mansion. BASE-LEVEL, n. in *geol.,* the low level of a country that has been worn down by the rains of ages; a section reduced to lowland of erosion. BASE-LINE, n. in surveying, a line serving as a basis for measurements in its locality. Such

lines are laid with extreme care, and marked by monuments. They may be many miles in length. In drawing, the lower level of the main subject of a picture. BASE OF OPERATIONS, the line of country or fortresses from which military operations can be advanced by troops, and munitions of war supplied, and to which retreat can be made in case of necessity.

BASE: the foot or lower member of a pillar, on which the shaft rests. Of the classical orders, the Doric column alone had no base. The height of the B. is usually about half the lower diameter of the shaft; and it is divided into the *plinth*, or flat projecting square block or blocks, immediately above the ground, and the *moldings* (q. v.), or fillets, which surround the column, and are usually circular. In the early Norman style, the bases of pillars still retained, from the Romanesque, forms closely resembling the Tuscan order. As Gothic architecture advanced, and emancipated itself from the arbitrary rules by which the classical orders were governed, bases became infinitely varied in detail, though never departing from the original conception of a firm foundation for the column.

BASE, in Chemistry: term applied to a compound body, generally consisting of a metal united with oxygen and hydrogen. Thus, the metal potassium, K, when it combines with oxygen, O, forms the oxide K_2O, which unites with water, yielding the base potassium hydroxide or caustic potash, KOH; and similarly the slaking of lime is a more familiar action of the same kind:—$CaO + H_2O = Ca(OH)_2$, the resulting calcium hydroxide, $Ca(OH)_2$ being a true base. A distinguishing feature of a base is that it is capable of entering into double decomposition with an acid, more or less neutralizing its acid properties, and forming a Salt (q. v.) and water. Thus, the base potassium hydroxide combines with sulphuric acid to form the salt sulphate of potash and water, as represented by the following equation:

Potassium hydroxide.		Sulphuric Acid.		Potassium Sulphate.		Water.
$_2KOH$	+	H_2SO_4	=	K_2SO_4	+	$2H_2O$.

So also potassium hydroxide and nitric acid, HNO_3, yield the salt potassium nitrate, KNO_3. Occasionally sulphur replaces the oxygen in a base. Thus, the metal potassium, K, unites with sulphur, S, to form potassium sulphide, K_2S, which can unite with a sulphur acid like sulpharsenious acid or orpiment, As_2S_3, to make the salt sulpharsenite of potash, K_2S, As_2S_3. The metal half of a base need not be a simple element, but may be a compound body which for the time, plays the part of a simple substance. Thus, the compound ethyl, C_2H_5, can combine with oxygen to form ordinary ether, $\left.\begin{matrix}C_2H_5\\C_2H_5\end{matrix}\right\}O$; and the base thus produced can, in its turn, combine with acids to form salts. An oxide may be soluble or insoluble in water. Thus the oxide potassa, K_2O, soda, Na_2O, ammonia, NH_4HO, baryta, BaO, strontia, SrO, lime, CaO, and magnesia, MgO, are more or

less soluble in water, and when dissolved in water true bases are formed, potassium hydroxide, KOH, barium hydroxide $Ga(OH)_2$, etc., while the oxide of iron, or rust, Fe_2O_3, and the red oxide of mercury, HgO, are insoluble in water, but soluble in acids. For *organic* bases, etc., see ALKALIES: ALKALOIDS: AMINES: CHEMISTRY.

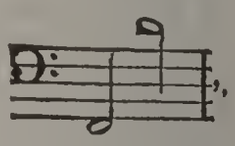
There is some confusion at the present time in the use of the word base but in Inorganic Chemistry the word is used to denote chiefly the class of compounds known as *hydroxides*, while the oxides form which these hydroxides or bases are formed are spoken of as *basic oxides*.

BASE, *bās*, in Heraldry: the lower portion of the shield. There is a dexter B., middle B., and sinister B., marked by the letters G, H, I, in the accompanying diagram, in which, for the convenience of the heraldic student, the other points of the escutcheon are also indicated. The *chief* or principal part of the escutcheon is the top, marked A. B. C. The *dexter* or right-hand side is that marked AG; the *sinister* or left-hand side, CI; for the shield is always supposed to be on the arm of the wearer, and it is his right and left hands, not those of the spectator, which are kept in view. The surface of the shield is called the *field*.

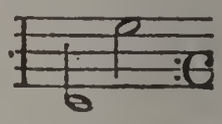
Base.

IN BASE.—When any figure is placed in the B. part of the shield, it is said to be *in base*.

BASE, or BASS, *bās*, in Music: the deepest or lowest part, by whatever instrument performed. The B., next to the upper part, is the most striking, the freest in its movements, and richest in effects. Its movement downwards is unfettered, unconcealed, and undisturbed, whereas the middle parts are circumscribed and concealed; in respect to harmony, the B. is the most important part in music, containing more frequently the fundamental notes of the chords, while on it is formed that most important and effective figure in music called 'organ-point' (q. v.).—B. is also the name of the lowest and deepest quality of the human voice.

The compass of a B. voice is generally from  ,

which should all be chest-notes, except, perhaps, the highest.

The most useful range, however, is from 

In the characteristic use of the B. voice, the old masters were unquestionably the greatest, especially Handel and Bach. The B. voice begins to show itself at the years of manhood, and is generally a change from the alto voice of a boy.—Base is also the name of an old stringed

instrument, with from five to six strings, tuned variously to suit the music, and played with a bow. It was a sort of middle instrument between the contra-bass and violoncello, but is now out of use. Double B. (contrabass) is the deepest-toned of stringed instruments.

BASE-BALL: a game now recognized as the national game of the United States. There is no doubt that base-ball originated from the old game of Rounders, a native-field sport of Great Britain. Rounders was a popular game in this country for many years before the introduction of the game of base-ball, which seems to have been in 1842, when a party of gentlemen organized the famous Knickerbocker Club of New York. The first regular match game played between two opposing clubs was 1846, June 19, between the Knickerbocker and New York clubs, in which the latter won by 23 to 1 in four hands or innings. Though the rules which governed the play of the various clubs of this early period differed in many respects from those now in force, they covered all the main points of the game as now played.

The first definite step toward organization and uniformity was the convention of 1858, which resulted in the incorporation of "The National Assoc. of B. Players." The earliest phase of professionalism was the sharing of gate-money during this period by the old Atlantic, Mutual, Eckford, Athletic, and Philadelphia clubs. The first regular professional base-ball team was that of Cincinnati, 1868, popularly known as the *Red Stockings,* under the veteran George Wright. It was the first regular salaried team, and from that year may be dated the existence of professional base-ball.

In 1871 the first step toward organized play was taken in the formation of nine teams into a national assoc. which played through this season for a pennant. This was won by the Athletics of Philadelphia.

In 1876 the National League was organized of 8 teams; and 1882 the American Assoc. came into existence. Till 1886, each of these organizations had its own code of playing rules, which caused no difficulty so long as each assoc. was playing in championship games within its own circuit; but during the interchange of exhibition games, prior to and after the championship season, questions frequently arose entailing much friction and ill feeling. In 1886, Nov., therefore, representatives of the League and Assoc. met at Chicago and drew up a reconstructed code of rules, which was ratified by both parties at their respective annual meetings, and thereby became 'the national playing rules of professional base-ball' governing all clubs that are parties to the national agreement.

In the fall of 1888 it became evident that there was already a movement organized by the players of the National League, known as the 'Brotherhood of Professional B. Players,' to take the control of the players out of the hands of the National League and practically break up the

protective compact arrived at in 1886, known as the national agreement. In 1889–90 the players' revolt broke up the harmony, and for a time placed the prospects and popularity of the game in jeopardy. This struggle resulted in a movement which has placed B. on a firmer footing than ever before, by the creation at Indianapolis, 1891, Dec. 15, out of the old rivals, the League and Association, of a new twelve-club organization known as the 'National League and American Assoc. of B. Clubs,' with clubs in Boston, New York, Brooklyn, Philadelphia, Baltimore, and Washington, in the east; and Pittsburgh, Cleveland, Chicago, Cincinnati, Louisville, and St. Louis in the west.

B. is a game in which 18 men take part. The field, or tract of land, upon which it is played, should be perfectly level, and at least 350 ft. wide by 500 long. There are four bases, 90 ft. apart, forming a perfect square, which is called the 'diamond.' The home base, or starting-point, is at right angles with the first and third bases, with the second base on a straight line from the home base, and exactly 127 ft. 4 in. distant, as is the first from the third base. The pitcher is placed in a square space of ground, marked off for him with lines, just 60 ft. away from the home base, and on a straight imaginary line with the home and second base. The catcher comes up close to the batsman and places a wire mask over his face, and straps an air pad over his chest and stomach, to guard against injuries from sharp foul tips. A player is stationed at each one of the three bases, and designated as the first, second and third baseman. There is another man, known as the short-stop, stationed midway between second and third base, while the three men in the out-field are called the right, centre, and left-fielders. Chalk lines are drawn from the home base to first and third respectively, and extended to the boundaries of the field, or to such a point where a flag is stationed, and known as the foul flag. All balls hit within these lines are fair, and those which are not, are foul. The umpire is the sole judge on all questions during the progress of a game, and the foul lines are principally for his guidance in making his decisions on balls hit to the out-field. A ball that strikes fair ground in the infield and rolls into foul ground before it reaches first or third base, is foul, and if it strikes foul ground and rolls into fair ground before reaching either first or third bases, as the case may be, it is fair. All fair or foul balls caught on the fly, are out, and when three are out, all are out. The game consists of nine full innings, except that (*a*) If the side first at bat scores less runs in nine innings than the other side has scored in eight innings, the game shall then terminate; (*b*) If the side last at bat in the ninth inning scores the winning run before the third man is out, the game shall terminate. Besides putting the side out on fly-ball catches, they are also put out at first base on balls thrown to that point by any of the in or out-fielders before the batsman, who becomes a base-runner the instant

he hits the ball, reaches that point. They can be put out also before they reach the other three bases. This, of course, lessens the chances of scoring, and forces free batting. The game is really one of great chance, which is the secret of its wide popularity. The same two nines might confront each other for 20 games in succession, and no two games would be alike, if the clubs were anywhere near equal in playing strength.

BASEDOW, *bâ-zė-do'*, JOHANN BERNHARD (properly Johann Berend Bassedau, or Bernhard von Nordalbingen, as he is often called): 1723, Sep. 8—1790, July 25; b. Hamburg, Ger., where his father was a peruke-maker. He attended the Johanneum there 1741–44, afterwards studied philosophy and theology in Leipsic, from which he went, 1746, as a private tutor to Holstein. In 1753, he was appointed a master in the acad. for young noblemen at Soröe. In 1761 he was removed from the Gymnasium at Altona on account of heterodox opinions. Rousseau's *Emile* awakened in him, in 1762, the thought of improving the method of education, and of reducing to practice Rousseau's maxims and those of Comenius. Contributions from princes and private persons, amounting to 15,000 thalers (about $10,700), covered the cost of his *Elementarwerk*, which, after the most pompous announcements, appeared as an *Orbis Pictus*, with 100 copper-plates by Chodowiecki, and was translated into French and Latin. Therein the young receive a large number of representations of the actual world, whereby B. sought at once to delight the eyes, and to awaken a sentiment of cosmopolitanism, at which his whole method aimed. As a model school on this method, he established, 1774, the *Philanthropin* at Dessau, to which place he had been called 1771. His restlessness of disposition, and the quarrels in which he was involved, especially with his active but capricious coadjutor Wolke, caused him to leave the Philanthropin; but he proceeded with eager endeavors to give effect to his ideas by educational works, which, however, aimed more at popularity than solidity, until, after many changes of residence, he died at Magdeburg. His influence on the public mind of his age, particularly in Germany, was very great. He has been justly reproached with disparaging the ancients, a consequence chiefly of his own want of sound scholarship, and with a multitude of exaggerations, mistakes, and conceits; yet his numerous philosophical and educational works drew attention and interest to the neglected subject of education, and he awakened men's thoughts to weighty truths.

BASEDOW'S DISEASE: see EXOPHTHALMIC GOITRE.

BASEL, *bâ'zėl*, or BA'SLE (Fr. *Bâle*): city and canton of Switzerland. The canton was divided 1833 into two sovereign half-cantons, called *Basel-city* (Basel-stadt, French Basle-ville) and *Basel-country* (Basel landschaft; French, Basle-campagne). The half-canton of Basel-city consists only of the city, with its precincts, and three villages on the right bank of the Rhine; the remainder of the canton forms the half-canton of Basel country. The

canton of B. is bounded by France and Baden, and by the cantons of Aargau, Soleure and Berne, and has, according to different estimates, from 170 to abt. 200 sq. m. Lying on the n. slope of the Jura, it is a country of hills and valleys. The mountains attain an elevation of from 2,000 to 3,000 ft. Chief rivers of B. are the Rhine (which flows through the n. part of the canton) and its tributaries, the Birz and Ergloz. The soil is fertile and well cultivated. The climate, except in elevated situations, is very mild. The inhabitants are chiefly employed in agriculture, the cultivation of fruit-trees and of the vine, cattle-husbandry, fishing, salt-works, the manufacture of ribbons, paper, woolens, linens, and leather. The transit trade is considerable.

The city of B. arose out of the Roman fortified post of Basilia or Basiliana, near Augusta Rauracorum, of which formerly more important place the village of Augst, near B., exhibits a few ruins. On the division of the Frank empire, the district of B. fell to Louis or Ludwig the German. The Emperor Henry I., in the earlier part of the 10th c., rebuilt the town, which had been destroyed. It then became a place of importance, and belonged for a time to Burgundy, but after 1032 formed part of the German empire. It became at an early period the seat of a bishop, who, from the 11th c., shared in the supreme power with the imperial governor, a number of noble families, and the burgesses. Amid many internal and external disturbances, the power of the nobility was gradually broken, that of the bishop restricted, and the authority of the burgesses extended. Surrounding towns were destroyed, or conquered, and purchased, with their territories, so that the city extended its dominion over a country district which until very recently was kept in a state of dependence and subjection. Involved in many feuds with the House of Hapsburg, B. closely allied itself to the Swiss confederacy; and after the peace between the Emperor Maximilian I. and the confederacy, B. formally joined it, 1501. From 1519 onward, the writings of Luther were printed in B.; and at the end of 20 years from that time, the reform doctrine had become generally prevalent, the chapter of the cathedral had left the city, and the convents had been suppressed. After the union with Switzerland, the triumph of the burgess party became more complete, part of the nobility emigrated, and those who remained were placed upon the same level with the freemen of the municipal corporation. Orderly industry, economy, and an external severity of manners, became the characteristics of the citizens; but the peace of the city was not unfrequently disturbed by strifes consequent upon the assertion of what was deemed undue authority by the magistrates. The government of the city, to which the whole canton was subject, was intrusted to a Great and a Little Council, under the presidency of alternate burgomasters and chief wardens of the guilds; but the Little Council, uniting legislative and judicial functions with the highest executive authority, became gradually preponder-

ant. All parties in the city, however, remained always well combined against the country district; and persons belonging to the city were appointed to all offices, civil and ecclesiastical, while the depression of the country district was completed by the neglect of a proper provision for education. The resulting dissatisfaction repeatedly broke out in fruitless rebellion. Under the impulse of the French Revolution, equality of rights was conceded 1798; but in 1814, although the equality of rights remained apparently intact, the new constitution of the canton was so framed, and the representation so distributed, as virtually to make the city again supreme. The discontent of the country district became so great that, after unsuccessful attempts to obtain redress of grievances by petition, civil war broke out 1831, which did not cease till the troops of the Swiss Confederation took possession of the canton, and the diet recognized the separation of the city and the country district, as sovereign half-cantons, 1833. The constitutions of the two half-cantons are in most respects similar, and are framed on the basis of the old constitution, modified in accordance with the principle of universal suffrage. According to the census of 1904 the half-canton of Basel-city contained 121,235 inhabitants, of whom 75,000 were Protestants; and Basel-country, 70,454, of whom over 50,000 were Protestants. By the federal constitution, proclaimed 1874, May 29, the half-canton of Basel-city sends two, and the half-canton of Basel-country three, members to the national council. The capital of Basel-country is Liestal. Since its separation from the city, more ample provision has been made for education, and there has been a rapid increase of material prosperity. Both Roman Catholic and Protestant clergy are paid by the state, and the parishes of the Reformed Church have received the right of schooling their own pastors.

B. is well-built and clean, but its appearance does not show it to be, as it is, the wealthiest city in Switzerland. Among its buildings are a cathedral, founded in the beginning of the 11th c., by the Emperor Henry II., and a bridge over the Rhine, built 1226. The Rhine divides the city into two parts—Great B., on the s. side, and Little B., on the n. B. is connected by railway with Strasburg on one side, and Berne, Lucerne, Zurich, etc., on the other. It has many benevolent and educational institutions, among which are an orphan asylum, and an institution for deaf mutes; a university founded 1459, with a large library, containing many MSS., a numismatological collection, a botanic garden, and a museum of natural history; the new art museum, in which are several pictures of the younger Holbein, long resident in B. (some accounts say he was born here); and a public library. During the Reformation, the university, now little frequented, was a central point of religious life, and it has numbered among its professors men of great eminence in learning, including Erasmus, who died here in 1536, and the mathematicians Euler and Bernouilli, natives of Basel.

The city of B. was much more populous in the middle ages than now. In the 14th c. its population was greatly reduced by the plague or 'black death' (q. v.), which raged with terrible severity, and is sometimes termed the 'death of Basel.'

BA'SEL, Council of: memorable and important ecclesiastical assembly held in the city of Basel; summoned by Pope Martin V., and his successor Eugenius IV., in accordance with an announcement made at the Council of Constance; and opened 1431, Dec. 14, under the presidency of the Cardinal Legate Julian Cesarini of St. Angelo. The hall in which it met is still shown. It addressed itself to the reconciliation of the Hussites with the Rom. Cath. Church, and to the reform of abuses in the church itself. But the first attempt to conciliate the Hussites, whom an army of crusaders had in vain sought to subjugate, was met with resistance by the pope, who not only refused his sanction, but empowered the cardinal legate to dissolve the council. The council strongly repelled the pope's pretension of right to dissolve it, and proceeded with its business. His injunctions, that it should remove to Italy, were equally disregarded. It renewed the decree of the Council of Constance, asserting the right of a general council to exercise authority over the pope himself, and on his persevering to issue bulls for its dissolution, caused a formal process to be commenced against him, and cited him to appear at its bar. It assumed the papal powers, and exericsed them in France and Germany, where its authority was acknowledged. It concluded a peace, in the name of the church, with the Calixtines, the most powerful section of the Hussites, by the Prague Compact of 1433, Nov. 20, granting them the use of the cup in the Lord's Supper. By this, the Emperor Sigismund was much helped in obtaining possession of Bohemia; and he in return sought to reconcile the council with Eugenius IV., who, being hard pressed by insurrections in the States of the Church, and afraid of losing his whole influence in France and Germany, solemnly ratified all its decrees, by a bull dated 1433, Dec. 15. Desirous, however, of limiting the papal prerogatives, the council restored to the chapters of cathedral and collegiate churches the free right of election to stalls and benefices, of which the pope had assumed the disposal; and with a view to the reformation of gross abuses, restricted the power of granting interdicts, and prohibited *annats* and other grievous exactions. It left the pope the right to dispose of those benefices only which belonged to the diocese of Rome, and prohibited the bestowal of reversions to ecclesiastical offices. It also appointed punishments for certain immoralities in the clergy; and prohibited Festivals of Fools, and all the indecencies which had been commonly practiced in churches at Christmas. It adopted decrees concerning the election of popes, and for the regulation of the College of Cardinals.

Eugenius, exasperated to the utmost, complained loudly

to all sovereign princes. At this time, a prospect was opened of the union of the distressed Greeks with the Church of Rome; and both the pope and the council endeavored to make use of this for the advancement of their own interests and influence. Both despatched galleys for the Greek deputies, but through the intrigues of his agents, the pope was successful, and brought the Greek deputies to Ferrara. The Abp. of Tarentum, a papal legate at B., circulated an ordinance in the name of the council, and sealed with its seal, recommending Udine or Florence as the place of conference. The ordinance was a forgery, and this proceeding put an end to forbearance on the part of the council, which, 1437, July 31, again cited the pope to its bar; and not only on his failing to appear, declared him contumacious, but on his opening an opposition council at Ferrara went so far, 1438, Jan. 24, as to decree his suspension from the functions of the popedom. His party, however, was so strong that this decree could not be carried into effect; and some of those who had been leading members of the council, the Cardinal Legate Julian himself, and the greater number of the Italians, left it and went over to his side. All the more resolutely did Cardinal Louis Allemand, Abp. of Arles, a man of great understanding, courage, and eloquence, now guide the proceedings of the council, which, 1439, May 16, declared the pope a heretic, for his obstinate disobedience of its decrees; and in the following session, formally deposed him for simony, perjury, and other offenses. On this occasion, the holy relics which were in B. were deposited in the places from which the Spanish and Italian members of the council had disappeared; and the sight of them produced much emotion, and reanimated the courage of the assembly, still consisting of 400 prelates, priests, and doctors, mostly French and German. The council, 1439, Nov. 17, notwithstanding the still further diminution of its numbers caused by the plague in B., elected Duke Amadeus of Savoy to be pope, who then lived as a hermit in Ripaglia, on the Lake of Geneva. He accordingly styled himself Felix V., but was recognized by only a few princes, cities, and universities. The Emperor Sigismund was dead, and even France and Germany, though they accepted the reforming decrees of the council, thought proper to remain neutral in the question regarding the popedom. The friendship of the Emperor Frederick III. strengthened the party of Eugenius; and the council gradually melted away, till, careful only for personal security, its members, after three years of inactivity, held its last session at B., 1443, May 16, and removed its seat to Lausanne. Here a few prelates still remained together under the presidency of Cardinal Allemand till in 1449, after the death of Eugenius, and the resignation of the anti-pope Felix, an amnesty was offered them by the new pope, Nicholas V., which they joyfully accepted. The B. reforming decrees are contained in no Rom. Cath. collection of decrees of councils, and are held

invalid by the canonists of Rome; yet they are of authority in canon law in France and Germany, where they were included in pragmatic sanctions, although their application has been modified by more recent concordats.

BA'SEL, TREATY OF: name of two important treaties of peace, concluded at Basel, 1795, Apr. 5, and July 22, between the representatives of the French Republic, Prussia, and Spain, by which Prussia withdrew from the coalition against France, took under her protection all the states of northern Germany which should, like herself, relinquish the war in which the German empire was engaged, and also gave up to the victorious republic her possessions beyond the Rhine; while Spain gave up her portion of St. Domingo, and prepared the way for that alliance with France whose later consequences were so important.

BASELLA, *ba-sĕl'la:* genus of plants, generally regarded as belonging to the nat. ord. *Chenopodiaceæ* (q. v.), but by some botanists as the type of a distinct order, *Basellaceæ.* The species are all tropical. B. *alba* and *B. rubra* have twining stems, are in common use as pot-herbs in the East Indies, and cultivated in China. In the neighborhood of Paris, they are raised on hot-beds, transplanted into warm borders, and furnish a substitute for spinach in summer. *B. rubra* yields a very rich purple dye. The great fleshy root of B. *tuberosa*, a South American species, also with a twining stem, is edible.

BASEMENT-MEMBRANE: thin lamella beneath epithelia of body canals, or beneath epidermis, iris, etc.

BASENET, n. *băs'ĕ-nĕt*, or BASNET, n. *băs'nĕt*, or BAS'CINET [OF. *bacinet*, a helmet—from *bacin*, a basin]: anciently a helmet or head-piece: see HELMET.

BASE OF OPERATIONS, in Military Maneuvers: some spot or line which the general of an army relies upon as a stronghold and magazine. An army cannot take with it all the food, forage, and ammunition for a long war; the consumption is enormous, and a constant supply is indispensable. Again, the sick and wounded cannot accompany the army through toilsome marches; the commander endeavors to send them back to some place of safety. Furthermore, fresh troops must have some spot from which they san safely advance through the enemy's country. To secure all these advantages, a *B. of O.* is necessary. It may be a port, a stretch of sea-coast, a river, a mountain range, according to circumstances: but it must be such as to serve as a magazine of supply, a place for retreat under disaster, and the end of a line of open communication extending to the spot occupied by the army. In the Italian war of 1859, the Austrian B. of O. was very fluctuating, owing in part to the disaffected state of the Lombard population around the great fortresses of Mantua, Peschiera, etc.; indeed the only trustworthy base was the Eastern and Tyrolese Alps. The French and Sardinian base, in the same war, was virtually Genoa, and the line of country extending thence to the great stronghold of Alessandria.

BASHAN, *bâ'-shan*, or BATANÆA (*the Fruitful*): country in Palestine, stretching from Mount Hermon in the Anti-Libanus on the n. to the brook Jabbok on the s., bounded w. by the Jordan, with eastern limits not clearly defined. Ashtaroth and Edrei were its chief cities, and the residence of its kings during the Amoritish dynasty. The last of its Amorite rulers was Og, who with all his sons was killed by the Israelites under Moses, at the battle of Edrei; and the half tribe of Manasseh settled in the land. The men of B. were remarkable for their stature, its pastures for their richness, and its sheep and oxen for their size and fatness. B. belonged to the tetrarchy of Philip, and afterwards to that of Agrippa II.

BASHEE, or BASHI, ISLANDS, *bâ-shē':* small cluster in the line between Luzon, chief of the Philippine chain, and Formosa; lat. and long. respectively 21° n. and 122° e. Politically, they belong to the Philippines, having been colonized by the Spaniards, 1783; they came under American control in 1900. Physically, they form a link in the vast archipelago which, from Formosa to Sumatra inclusive, connects the s.e. of China with the w. of Malacca. They were discovered 1687 by Dampier, who called them the Bashi Islands, on account of the popularity among the islanders of an intoxicating liquor of that name. Pop. about 9,500.

BASHFUL, a. *băsh'fûl* [see ABASH]: very modest; shy; easily confused. BASH'FULLY, ad. *-lĭ*. BASH'FULNESS, n. modesty in excess; diffidence; shyness.

BASHFULNESS: excessive modesty which expresses itself in instinctive external manifestations such as blushing, awkward movements, lack of ability to express one's self in language. Indicates incomplete adjustment to circumstances, usually due to immaturity or lack of self-possession. Is accompanied by mental confusion and desire to hide.

BASHI-BAZOUKS, n. plu. *băsh'ĭ-bă-zûks':* a kind of irregular troops in the Turkish army. Very few are Europeans; they are mostly Asiatics, from some of the pashalics in Asiatic Turkey. They are wild turbulent men, ready to enter the sultan's service under some leader whom they can understand, and still more ready to plunder whenever an opportunity offers. During the Russo-Turkish war of 1854, etc., they had many encounters with the enemy in that kind of irregular warfare which the Russians intrust to Cossack horsemen; but the peaceful villagers had almost as much distrust of the B.-B. as of the Russians. When the British government resolved, 1855, to take into pay a Turkish contingent, to aid in the operations of the war, a corps of B.-B. was put in charge of an Indian officer, but the task of reducing them to discipline was not completed when the war ended. Their ferocity was exhibited in the Servian war, but most relentlessly in the massacre of Batak, where, 1876, May, under Achmet Agha, they slew over 1,000 defenseless Bulgarians.

BASH'KIRS: see TURKS.

BASIC, a. *bā'-zĭk* [see BASE 2]: in *lithology*, a term used to designate such igneous rocks as basalt, which contain only about 50 per cent. of silica; used in contradistinction to acidic. BASICITY, n. *bā-zĭs'ĭ-tĭ*, the condition or state of the base or foundation of a thing; in *chem.*, the tendency of a base to combine with one or more equivalents of an acid.

BASICITY OF ACIDS: The term applied to designate the number of equivalents of a base with which one molecule of an acid can combine. Put in another way, the basicity of acids is measured by the number of hydrogen atoms, in one molecule of an acid, which can be replaced by metals. In the case of inorganic acids this number is usually, but not always, equal to the total number of hydrogen atoms contained in the acid. This is not true of organic acids. Hydrochloric acid, HCl, forms sodium chloride, NaCl, carbonic acid, H_2CO_3, forms baking soda, sodium acid (or hydrogen) carbonate also called sodium bicarbonate, $NaHCO_3$, and washing soda, sodium carbonate, Na_2CO_3; phosphoric acid, H_3PO_4, yields the salts NaH_2PO_4, Na_2HPO_4 and Na_3PO_4; acetic acid, CH_3CO_2H, gives sodium acetate; and citric acid, $C_3H_5O(CO_2H)_3$, sodium citrate, $C_3H_5O(CO_2Na)_3$. The *basicity* of these acids is mono-, di-, tri-, mono-, and tri-, respectively. See also SALTS: BASES: CHEMISTRY.

BASIDIUM, n. *bă-sĭd'ĭ-ŭm*, BASIDIA, plu. *bă-sĭd'ĭ-ă* [L. *basidĭŭm*, a little pedestal—from *basis*, a pedestal]: in some fungi, a cell bearing on its exterior one or more spores. BASIDIOSPORE, n. *bă-sĭd'ĭ-ō-spōr* [Gr. *spora*, a spore or seed]: a spore borne upon a baisdium. BASID'IOSPOR'OUS, a. *-spōr'ŭs*, bearing spores upon a basidium.

BASIENTO, *bâ-se-ĕn'to*, or BASENTO, *bâ-sĕn'to:* river of Italy, rising in the Apennines, w. of Potenza, flows e.s.e. through the province of Basilicata to the Gulf of Taranto.

BASIFUGAL, a. *bā-sĭf'ū-găl* [L. *bāsis*, a foundation; *fugĭō*, I flee, I avoid]: in *bot.*, applied to veins in leaves, etc., which ramify from base to summit. BASIPETAL, a. *bā-sĭp'ĕt-ăl* [L. *pĕto*, I seek]: seeking or ramifying from summit to base, as veins, developed from above downward, as lobes.

BASIFY, v. *bā-sĭ-fī* [Eng. *base*, and L. *fīō*, I am made]: to convert into a base. BA'SIFYING, imp. BASIFIED, pp. *bā'sĭ-fīd*. BASIFIER, n. *bā'sĭ-fī-ėr*, he or that which.

BASIL, n. *băz'ĭl* [Sp. *bisel*, bevel-edge of a thing—from BASE 2]: an edge pared or sliced off; the slope of the edge of a tool. V. to grind or form the edge of a tool to an angle. BAS'ILING, imp. BASILED, pp. *băz'ĭld*.

BASIL, n. *băz'ĭl* [F. *basillic;* It. *basilico*, the basil—from Gr. *basil'ĭkŏs*, royal—*lit.*, the royal herb], (*Oc'ymum*): genus of plants, nat. ord. *Labiatæ* (q. v.). The species are all natives of the tropics, or of the warmer temperate parts of the world, and are generally characterized by a pleasant

aromatic smell and taste. They are reckoned among *sweet herbs*.—SWEET B. (*O. Basilicum*) is an annual, native of the East Indies, about one foot high, with ovate or oblong leaves, and flowers in whorls of six; long cultivated in Europe for culinary purposes, as a seasoning. It has also the reputation of being a palliative of the pains of childbirth.—BUSH B. (*O. minimum*), also a native of the East Indies, is cultivated for the same purpose and has the same qualities. Basil of the United States is the genus *Pycnanthemum*, Mountain Mint; flavor mint-like; 2 species n.; 4 s.; 3 n. and s.; 2 general, *P. pilosum* and *P. lanceolatum*—corolla whitish or purplish, lips purple-dotted: dry soils, hills and woods.

Basil (*Ocymum Basilicum*).

BASIL, n. *băz'ĭl* [possibly from an Oriental word meaning to strip]: the skin of a sheep tanned, used in bookbinding and for making slippers.

BASIL, *bā'sĭl*, surnamed THE GREAT (SAINT BASIL): abt. 329–379, Jan. 1; b. Cæsarea, in Cappadocia: one of the most eminent and eloquent of the Greek Fathers. He studied under the heathen philosophers at Athens, and became an advocate in his native city, but afterwards founded a monastic society, was ordained a presbyter 362; and succeeded Eusebius as Bp. of Cæsarea, 370, in which office

he continued till his death. He resolutely resisted invitations to the court of Julian the Apostate, with whom he had been intimate as a fellow-student at Athens, and displayed great constancy when the Emperor Valens began to persecute him, on account of his opposition to Arianism. He was engaged in most of the controversies of his time, but conducted controversy in a peaceful and generous manner. His rules of monastic life are still followed in the Greek and other oriental churches, in which he is highly honored as one of the greatest of saints. In the Rom. Cath. Church, also, they are followed in a few convents, styled of the order of *Basilians*. The influence of B. was greatly felt in the promotion of monasticism throughout the West as well as the East, and to him is ascribed the introduction of the three universal monastic vows of obedience, chastity, and poverty. The best editions of his works are that of the Benedictines (3 vols., Par. 1721–30, fol.), and that of the brothers Gaume (3 vols., Par. 1835–40, 8vo); but the authenticity of many of the moral and ascetic pieces is doubtful. His anniversary is celebrated, in the Greek Church, Jan. 1—the day of his death; in the Latin Church, June 14—the day of his ordination.

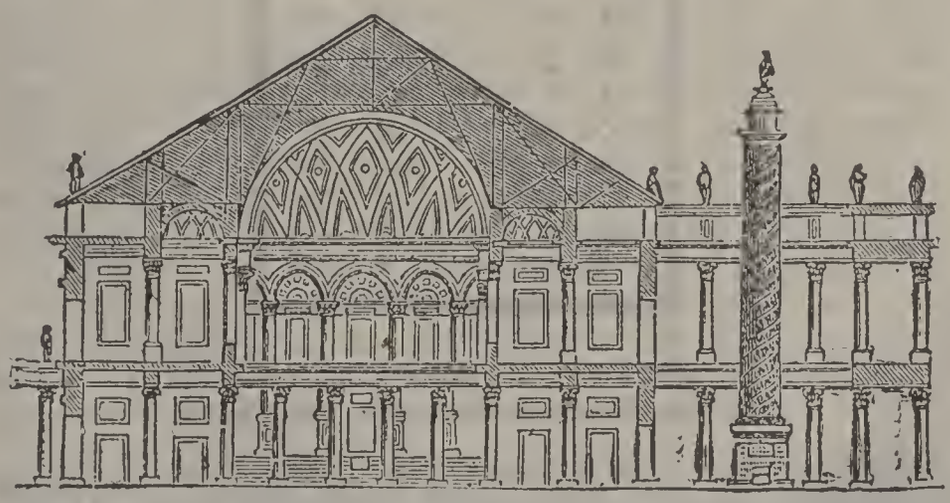
BA'SIL I., the Macedonian Emperor of the East: 813 (or 826)–886. His early life is differently related, but his biographers agree that he came to Constantinople when young, and was appointed chamberlain to the Emperor Michael, 861. Subsequently, the emperor made him his colleague in the sovereignty. B. now used his influence to restrain Michael from committing those excesses which rendered him hateful to the people; but when he found his remonstrances unavailing, he headed a conspiracy against him, the result of which was the assassination of the emperor, 867. His first care was to heal the wounds both of the church and the state. He replaced Ignatius upon the patriarchal throne, and dismissed Photius, whom, however, he re-established in his authority the year after. His valor made him the terror of the Saracens, from whom he reconquered Asia Minor. The prodigality of Michael had exhausted the public treasury; by a wise economy, B. refilled it. All extortioners, moreover, were sought out and punished. The profligate companions of the late monarch were condemned to disgorge one-half of the largesses which Michael had showered upon them. B. also entered into a treaty of alliance with the Russians of Kiew, to whom he sent missionaries to preach the gospel, and who, from that time, began to embrace Christianity, and acknowledge the authority of the Greek Church. He died from wounds which he received while hunting a stag. Several letters of his are extant, also a book full of wise advice addressed to his son.

BASILICA, n. *bă'zil'ĭ-kă* [Gr. *basil'ĭkŏs*, kingly—from *băs'ĭleus*, a king]: a royal or public hall where justice was administered the middle vein of the arm; a magnificent church. BASILICON, n. *bă zĭl'ĭ-kon*, a yellow ointment, made of resin, wax, and lard or olive-oil. BASILIC, a. *bă-zĭl'ĭk*, or

BASILICAL, a. *bă-zĭl'ĭ-kăl*, pertaining to a public or regal edifice; pertaining to the middle vein of the arm.

BASILICA, *ba-zĭl'i-ka:* a code of laws of the Grecian empire, the compilation of which was begun in the reign of the Emperor Basil I., the Macedonian (d. 886)—from whom it is generally supposed to have derived its name; completed by his son Leo the Philosopher; and revised, 945, by order of Constantine Porphyrogenitus, son of Leo. There is some doubt whether the work has come down to us as completed by Leo, or as revised by Constantine, and unfortunately we do not possess the whole of the 60 books of which it originally consisted. It was very much an adaptation of the code of Justinian to altered circumstances, and is of great value for the interpretation of the *Corpus Juris*. The principal editions are that of Fabrott (7 vols. fol., Par. 1647), and the recent one of Heimbach (vols. 1–5, Leip. 1833–50), which includes portions discovered since Fabrott's time. The B. has been the subject of many commentaries.

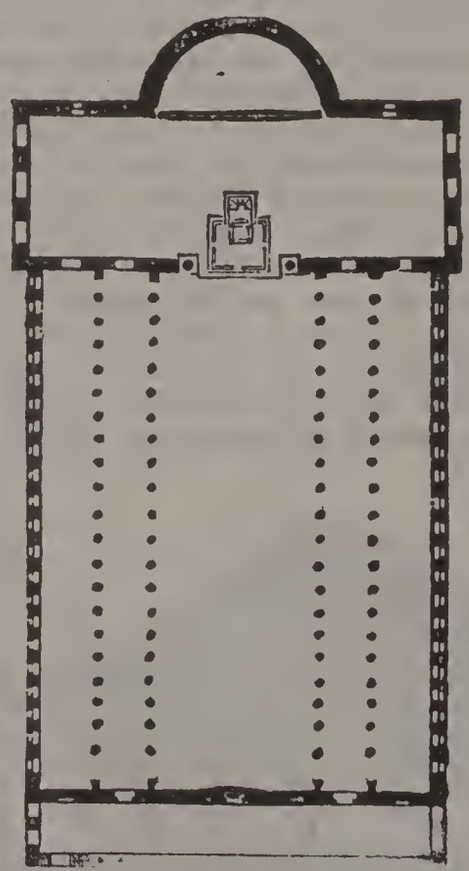
BASIL'ICA: originally, probably the hall or court-room in which the king administered the laws made by himself and the chiefs who formed his council. When monarchy was abolished at Athens, the second of the magistrates who succeeded to the kingly power was called the Archon-basileus, the first being styled the Archon by pre-eminence; and it is as the court or hall (stoa) in which the Archon-basileus administered justice, that the B. first appears in authentic history. But it was among the Romans that the B. attained its chief importance; and in addition to its original use as a court of justice, became a market-place, an exchange, a place of meeting for men of business generally. It was not till a comparatively late period, however, that a B. was erected at Rome, the first known being the B. Porcia, B. C. 182. From this period till the time of Constantine, they were constructed in great numbers. Some twenty are known to have existed in Rome and latterly, every provin-



Section of Trajan's Basilica, Rome.

cial town, even those of small extent, had each its B., as that of Pompeii, now the most perfect example, still testifies. The most frequented part of the city was always selected for

the site of a B.; and as this was almost always the Forum, the words Forum and B. are occasionally used as synonymous by ancient writers. The earliest basilicas were entirely open to the external air. It was usual, for this reason, as well as for the convenience of those who might be compelled to frequent them in bad weather, to select for them a sheltered and convenient position. Latterly, an external wall was substituted for the peristyle of columns with which the original basilicas were surrounded; the external columns, if continued at all, being used only as a decoration, and confined generally to the vestibule. It was in this form that the B. suggested the idea of the Christian Church (see APSE); and the readiest mode of explaining the structure of the B. to a modern, is to imagine the process which was then performed reversed, and in place of converting the B. into a church, to convert the church into a basilica. This will be effected by simply removing the roof from the *nave*, the aisles remaining covered, and even being frequently furnished with galleries, as in Protestant churches. The judge's seat was generally in a circular portion of the building which protruded from its further end, in which the altar was afterwards placed (see APSE), the



Ground-plan of Basilica of St. Paul, Rome.

great entrance to the B. fronting it, as the western door of a cathedral fronts the high-altar. The space required by the pretor for his court was separated by a railing from the other portions of the building, which were devoted to the various purposes we have mentioned. It must not be supposed from this description, that the form of the B. was

always the same. Sometimes there was no hemicycle or apse, as in the B. at Pompeii, in which case the tribunal was cut off from the nave; sometimes there were two, as in the B. of Trajan. Again, the B. was sometimes entered, not from the end, but from the sides, where the transepts of a modern church are situated; and at the end opposite that in which the tribunal was placed, there was often a row of small chambers, the uses of which are not accurately ascertained, and probably were not invariable. In the plan of the B. of Pompeii, there was an outside stair which led to the upper gallery, which in this case passed entirely round the building. The gallery was the place to which loiterers usually resorted for the purpose of watching the business proceedings below; and the one half of it is said to have been devoted to men, the other, to women. Of the vast size of some of these buildings, a conception may be formed from the accommodation which must have been required for the tribunal alone, where, in addition to the curule chair of the pretor, and space required by the suitors and their advocates, seats had to be provided for the *judices* or jurymen, who occasionally amounted to as many as 180.

The term B. was also applied in the middle ages to the large structures erected over the tombs of persons of distinction, probably from their resemblance to small churches; thus, the tomb of Edward the Confessor, in Westminster, is called a B. (see chronicle of the Mayors of London, quoted by Parker).

BASILICATA, *bâ-se-le-kâ'tâ*, or POTENZA: province in the s. of the kingdom of Italy, includes nearly the same territory as ancient Lucania. Foggia and Avellino bound it on the n.; Bari and Lecce, on the n.e. and e.; the Gulf of Taranto and Cosenza, s.e. and e.; and Salerno and the Mediterranean, on the w.; area 4,000 sq. m. Pop. (1901) 490,000. cap. Potenza; other chief towns are Francavilla and Tursi. B. lies mainly on the e. side of the main ridge of the Apennines, between it and the Gulf of Taranto. The interior is wild and mountainous, and though there are some large forests in the province, the general aspect is bare and barren. Four considerable rivers—the Basiento, Brandano, Agri, and Sinno—flow through it from the w., in an e.s.e., direction, forming as many valleys, which slope gradually into an exceedingly fertile plain, varying in breadth from 4 to 10 m. Here corn is raised in abundance, also wine, hemp, tobacco, and liquorice. Swine, sheep, and goats are reared in the mountainous districts, and silk forms a product of the valleys. B. is greatly in need of good roads, and is subject to earthquakes.

BASILICON, *ba-sĭl'i-kŏn:* an ointment composed of yellow wax, black pitch, resin, and olive oil. Hence it was called *Unguentum Tetrapharmacum* [*tetra pharmaka*, four drugs]. The resin, wax, and pitch are melted together over a slow fire; the oil is then added, and the mixture, while hot, strained through linen. The straining is directed

in consequence of the impurities which resin often contains. B. ointment, or resin cerate, as it is sometimes called, is much used as a gentle stimulant application to blistered surfaces, indolent ulcers, burns, scalds, and chilblains.

BASIL'ICON DO'RON [Gr. royal gift]: celebrated prose work of King James VI. of Scotland, written for the instruction of his son, Prince Henry, a short time previous to his accession to the English throne. It consists of three books. The first treats 'Of a King's Christian Duty towards God;' the second, 'Of a King's Duty in his Office;' and the third, 'Of a King's Behavior in Indifferent Things.' It was first published 1599; afterwards in London 1603, 8vo; and translated into Latin by Henry Peacham, who presented it, richly illuminated, to the prince. This Latin version was published in London 1604, 8vo. A French edition appeared at Paris 1603, 8vo. and another 1604, 16mo. Like the royal author's famous work on *Demonology*, and his *Counterblast to Tobacco*, the *B. D.* is now only a literary curiosity.

BASILIDANS, n. *ba-sĭl'ĭ-danz:* the followers of Basilides (q.v.).

BASILIDES, *bas-i-lī'dēz:* an Alexandrian Gnostic, who lived during the reigns of Trajan, Hadrian, and Antoninus Pius. Regarding his life, little is known. He is said to have taught in Antioch; afterwards in Persia; finally, in Egypt, where he is supposed to have died shortly before the middle of the 2d c. He was a disciple of one Glaucias, not elsewhere mentioned in history, but whom he terms an interpreter of St. Peter, and from whom he alleges that he had received the esoteric faith of that apostle. B. probably considered himself a Christian, but his fantastic speculations resemble the doctrines of Zoroaster, and some points of the Indian philosophy. According to the system of B., there are two eternal and independent principles—the one, good; the other, evil. Whatever exists, emanates from these. The good principle—i.e., the Supreme God or Father—constitutes, with his seven perfections, viz., the Mind, the Word, the Understanding, Power, Excellences, Princes, and Angels, the blessed ogdoad (combination of *eight*). These seven perfections, or powers, in which the Supreme God is reflected, are in their turn themselves reflected, but more feebly, in seven other angelic powers, which emanate from them; and so on through the whole circle of emanations, which amount to 365, the mystic number so often inscribed on the symbolic stones in the Gnostic schools (see ABRAXAS STONES). Each of these angelic powers governs a world. There are, consequently, 365 worlds, to each of which B. gave a name. The head of the 365th, or lowest world, rules the material universe, which, with other angels, he also created. He is the God or Jehovah of the Old Testament, and when the earth was divided among the rulers of the material universe, the Jewish nation fell to the share of himself, who was the prince of the lowest

class of angels. But wishing to absorb all power himself, he strove against the other angels, and to make them subject to his 'chosen people,' the result of which was war, strife, division in the world, together with the loss of the true religion, to restore which the Supreme God sent the first Æon (*Nous*, or Intelligence), who united himself to the man Jesus at his baptism, and so taught men that the destiny of their rational spirit was to return into God. This *Nous*, however (who was the true Christ), did not really suffer crucifixion, for, changing forms with Simon of Cyrene, he stood while Simon suffered, and afterwards returned to heaven. B. also taught the doctrine of a purgatorial transmigration of souls in the case of the wicked. His disciples (Basilidans) were numerous in Egypt, Syria, Italy, and even in Gaul, where they continued till the 4th c. They were accused by their enemies of Antinomianism and 'magic,' but whether on good grounds or not, cannot be ascertained.

BASILISK, n. *băz'ĭ-lĭsk* [Gr. *basilis'kos;* L. *basĭlĭs'cus*—from Gr. *băs'ĭleus*, a king]: the cockatrice; a fabulous serpent having a white spot on its head resembling a royal crown; a kind of lizard, something like an iguana.

BASILISK, *băs'i-lĭsk:* according to ancient and mediæval authors, a terrible creature; now reckoned entirely fabulous—the fables concerning it being so many and so monstrous, that it is vain to seek for any foundation of truth, or inquire if any of them originally had reference to any particular creature whatever. The ancients, as Dioscorides, Galen, and Pliny, describe it as a serpent; in the middle ages, it was generally represented as more of a lizard, but provided with eight instead of four feet. It appears to have been at last identified with the Cockatrice (q.v.) which was believed to be generated in a very wonderful manner, being produced from an egg laid by an extremely old cock, and hatched by a toad; for which reason we find the B. sometimes figured with something like a cock's head. The B. was the king of dragons and serpents, all of which left their prey to it whenever it approached; whence its name, *basiliscus* (Gr.) diminutive of *basileus*, a king—sometimes exactly translated into Latin by *regulus*. It had some prominences on its head, which, when as figured in books, assumed the appearance of a crown. It inhabited the deserts of Africa, and, indeed, could inhabit only a desert, for its breath burned up all vegetation; the flesh fell from bones of any animal with which it came in contact, and its very look was fatal to life; but brave men could venture into cautious contest with it by the use of a mirror, which reflected back its deadly glance upon itself.—These things are mentioned on account of the allusions to them by poets and other writers.—The blood of the B. was, of course, extremely valuable to magicians. It occupies an important place in some of the legends of the saints, and Pope Leo IV. is said to have delivered Rome from a B. whose breath caused a deadly pestilence.

BAS'ILISK, in modern Zoology: genus of saurian reptiles of the family of *Iguanidæ* (see IGUANA), differing from the iguanas in the want of the dewlap or appendage of skin under the throat, and of the series of pores on the inside of each thigh; also in having a continuous elevated crest along the back and tail, capable of being erected or depressed at pleasure, and apparently intended to aid the motions of the animal in water like the corresponding fin of a fish.—The basilisks are remarkably adapted both for climbing trees and for swimming. Their feet are not webbed, their toes rather long. They are perfectly harmless creatures, very active and lively, and it is difficult to say why they should have received the name of the fabulous monster of antiquity, unless because their appearance is disagreeable, and perhaps because an appendage at the back of the head may have been thought to represent the crown of the dragon king. This appendage is most conspicuously developed in the Mitred or Hooded B. (*B. mitratus*), native of the tropical parts of America, and consists of a hood or membranous bag,

Hooded Basilisk.

capable of being dilated with air, and then about the size of a pullet's egg, which is supposed, notwithstanding its extremely different situation, to have a use somewhat analogous to that of the air-bladder of fishes. The mitred B. is from 25 to 30 inches long, including the long and very tapering tail.—Another and larger species, of a generally greenish color (*B. Amboinensis*), inhabits the islands of the Indian archipelago, and is much used there for food. Its flesh is said to be very white and tender. It is often seen on the branches of trees above water, into which it drops when alarmed.

BASILOSAURUS see ZEUGLODON.

BASIN, n. *bā'sn* [F. *bassin;* OF *bacin*, a basin—from mid. L. *bacchīnon*, a vessel: Gael. *bas*, the palm of the hand with the fingers bent over it; *bac*, a hollow· It. *bacino*]· a circular hollow vessel for containing water, etc., a pond; a bay; a dock; the district of country drained by a river: a concave piece of metal, in shape resembling a basin on which glass-grinders form their convex glasses; a round shell or case of iron placed over a furnace, in which hatters mold a hat into form. BASIN-SHAPED, a. BASINED, a. *bā'snd*, enclosed in a basin; in *geol.*, any dipping or disposition of strata towards a common centre or axis; denoting the depressions and receptacles of seas or lakes.

BA'SIN, in Geography: region drained by a river, or lake. The *B.* of a river is the whole tract of country drained by that river, and is, of course more or less concave. The line or boundary which separates one river-basin from another is called the water-shed. By tracing these water-sheds, the whole of a country or continent may be divided into a number of distinct basins; and this is one of the most instructive elements in the physical geography of a country. The *B.* of a lake or sea is made up of the basins of all the rivers that flow into it.

BA'SIN, in Geology: a depression in the strata, in which beds of a later age have been deposited. Thus, the London B., consisting of tertiary sands and clays, occupies a hollow in the chalk, which is bounded by the North Downs on the s. and by the chalk-hills of Berks, Hilts, Bucks, and Herts on the n. The term has also been applied to synclinal depressions of strata, produced by the elevation or depression of all the strata contained in the B. as the coal-B. of south Wales.

BASINERVED, a. *bā'sĭ-nĕrvd* [L. *basis;* Eng. *nerved*]: in *bot., of leaves,* having the nerves, or 'ribs,' all springing from the base.

BA'SINGSTOKE: town in the n. of Hampshire, Eng. 46 m. w.s.w. of London. It is a place of much activity, being at the junction of five main roads to London from the s. and w. of England. The country around is fertile and wooded. The chief trade is in corn, malt, coal, and timber. There is not far from the town, an ancient camp, surrounded by an irregular oval embankment, 1,100 yards in circumference, with an entrance on the e. and w. sides. Basing House Castle, belonging to the Marquis of Winchester, long withstood the forces of the Commonwealth, but Cromwell at last took it by storm, and burned it to the ground, 1645. Pop. (1881) 5,574; (1891) 7,960; (1901) 9,810.

BASIROSTRAL, a. *bā-sĭ-rŏs'tral* [L. *basis; rostralis,* pertaining to the rostrum or bill of a bird]: situated at the base of the bill.

BASIS: see under BASE 2.

BASISOLUTE, a. *bā-sĭs'o-lūt* [L. *basis,* a base; *solutus,* unbound, loose, free—pp. of *solvo,* to loosen, separate, disengage]: in *bot., of leaves,* extended downwards beyond the point at which theoretically they arise.

BASI-SPHE'NOID, a. *bā'zī-,* and BASI-OCCIPITAL, a.: denoting two bones in the base of the vertebral skull.

BASK, v. *băsk* [Icel. *baska,* to warm: Dut. *bakern,* to bask, as in the sun: connected with BATH]: to bathe in sun-heat or fire-heat; to lie at ease enjoying the heat of the sun or of a fire: to be prosperous under benign influence. BASK'ING, imp. BASKED, pp. *băskt.* BASKING'SHARK, the largest of the sharks, often 30 to 40 feet in length; also called the SUN-FISH.

BASKERVILLE, *bas'ker-vĭl* JOHN: 1706–75; b. Wolver-

ley, Worcestershire, Eng.: celebrated printer and type founder. He became a writing-master in Birmingham, and afterwards carried on the business of japanning there with great success. He began about 1750 to make laborious and costly experiments in letter-founding, and succeeded in making types scarcely yet excelled. He printed an edition of Virgil at Birmingham, 1756, followed by other Latin classics, a few English and Italian authors, and a New Testament (Oxf. 1763), much admired as specimens of printing, although not otherwise possessing high merit. His services to the art of printing met with little encouragement and no requital. He was a man of obliging disposition, but of a gloomy temperament, and condemned all religious service as superstition. Baskerville editions of works are now prized by persons of taste.

BASKET, n. *băs'kĕt* [W. *basged*—from *basg*, a netting, a plaiting, as of twigs or splinters: L. *bascauda*—a word of British origin, a bread-basket]: an article of domestic use, made of osier-twigs, or any pliable substance; sometimes the materials are gold, silver, iron, glass, etc. Baskets have been in use from very early ages. The Israelites were commanded (Deut. xxvi. 2) to offer unto the Lord, as soon as they came into possession of the land of Canaan, 'the first of all the fruit of the earth' in a *basket*. The baskets used on such occasions by the rich Jews were made of gold and silver, and were returned to the offerers; but those used by the majority of the people were of barked willow, and were retained by the priests. The ancient Britons were remarkably expert in the manufacture of baskets, which were much prized by the Romans for their neatness and elegance. The process of B.-making is very simple, and appears to be well known among the rudest peoples—even among the aborigines of Van Diemen's Land.

BASKET BALL: an indoor game played upon a circumscribed space on a floor, usually with five players on a side, the rules as to interference, playing out of bounds, etc., being adapted from those of foot-ball. A basket is placed at each end of the playing space at a height of about 10 feet. The ball, which is round and somewhat lighter than a foot-ball, is passed from one player to another by throwing or striking with the hands only, the ultimate object being to lodge it in the opponents' basket the action scoring one point.

BASNAGE DE BEAUVAL, *ba-nazh' dė bō-vāl'*, JAQUES 1653, Aug. 8—1723, Sep. 22; b. Rouen; son of Henry, an able advocate: of a distinguished French family, mostly supporters of the Protestant cause. Having studied theology at Geneva and Sedan, he became pastor of the reformed church in Rouen (1676). That church being interdicted in 1685, B. obtained leave to retire to Holland, where he finally settled as stipendiary minister of the Walloon Church in the Hague, having gained the friendship of the Grand Pensionary Heinsius. Here while zealously discharging his religious duties, he was called upon to take an active part in state affairs, par-

ticularly in negotiating the defensive alliance concluded between France, England, and the states-general, 1717, Feb. 14. Amid all these duties and distractions, B. cultivated literature with ardor, and was no less distinguished for his extensive learning than for the polish of his manners and the integrity of his character.

His chief works, which have been frequently laid under contribution without being named, are *La Communion Sainte* (Rott. 1688), a work approved even by Rom. Catholics, and often reprinted; *Traité de la Conscience* (Amst. 1696, 2 vols.); *Histoire de l'Eglise* (Rott. 1699, 2 vols. fol.) *Histoire des Juifs* (Rott. 1706, 5 vols.), one of B.'s best productions, and translated into English by Th. Taylor (Lond. 1708); *Dissertation Historique sur les Duels et les Ordres de Chevalerie* (Amst. 1720).

BASON, n.: an incorrect spelling of BASIN, which see.

BASQUE, n. *băsk* [F.—from L. *Vascŏnēs*]: the language spoken in the departments of the Pyrenees, in France; also in Navarre, Biscaya, Guipuzcoa, and Alava, in Spain, etc. BASQUISH, a. *băs'kĭsh*, of or pertaining to Biscay or its inhabitants.

BASQUE PROVINCES, *băsk:* district of Spain, lat. 42° 25′–43° 28′ n., long. 1° 44′–3° 25′ w.; comprising the three provinces of Biscay, Guipuzcoa, and Alava—the Ancient *Cantabria.* They form a sort of triangle, the base of which is the Bay of Biscay on the n., and the apex the town of Logrono in the s; the boundary-lines of Navarre on the e., and Santander and Burgos on the w., forming the two sides. Area of the three provinces (without Navarre, often reckoned with them), 2,782 sq. m. The surface of the B. P. is very mountainous, particularly that of Alava, which is everywhere cut up into deep narrow valleys by offsets from the main chain of mountains. The rivers of Biscay and Guipuzcoa, none of which are important, empty after a short course into the Bay of Biscay; those of Alava flow down the opposite slopes into the Ebro, which carries their waters to the Mediterranean. The climate in all the three provinces is, on the whole, mild and salubrious. The general aspect of the country is very picturesque, the hills in most cases being covered with wood to the very summit. The principal trees are oak, beech, and chestnut. The fruit of the chestnut forms an article both of diet and of export. The soil in the valleys and plains, though not very rich, has been rendered productive by the energy and labor of the people. But science and machinery have done little to assist nature and manual exertion. A spade, or prong-fork, is the chief mechanical aid of the Basque peasant. The farms are small, usually only about four or five acres, and rarely more than can be managed by the farmer and his family. The roads and agriculture of these provinces contrast very favorably with those of Spain generally. Products are wheat, barley, maize, flax, hemp, etc.; the wheat, however, ripening only in the most favored localities. Iron is in abundance; also

copper and tin, marble porphyry, and jasper. The fisheries on the coast are productive.

The Basque race is not confined to the B. P., or to the s. side of the Pyrenees. The greater part of the inhabitants of Navarre (q. v.) are pure Basques. And on the French side of the Pyrenees, three cantons of the department Basses Pyrénées (pop. of 145,000), are inhabited by Basques, who, though they retain their own tongue, have not so fully preserved the characteristics of the race as their Spanish brethren.

The Spanish Basques are a simple, brave, and independent people, willing to undergo any hardships rather than surrender their mountain-freedom. None of their many invaders were ever able to effectually subdue or expel them. The B. P. retained till 1876 a separate constitution, guaranteeing them many political and fiscal privileges not possessed by the rest of Spain (see FUEROS). But on the suppression of the Carlist insurrection, which had all along its stronghold in the B. P. and in Navarre, the old immunities were abolished. The Basques are even prouder than Spaniards, and the mere fact of being born in their territory secures the privilege of 'universal nobility.' *Euscaldunac* is the name the Basques give themselves; their country they call *Euscaleria;* and their language, which is peculiarly their own, *Euscara.* The language, of which there are several mutually unintelligible dialects, cannot be classed with any Aryan or Semitic tongues, but has points in common with Mongol, American, and African languages. The Basques are probably the descendants of the ancient Iberi, who occupied Spain and s. France—and possibly a much wider area in very old times (see EUSKARIAN). The Basques are fond of music, and on Sunday they indulge in singing, dancing, and single-stick. Pop. (1877) 450,699; (1888) 510,419; (1900) about 600,000.

BAS-RELIEF; see ALTO-RILIEVO.

BAS-RHIN: a former dept. of France, now included in the German territory of ALSACE-LORRAINE: see ALSACE.

BASS, n. *bās*, BASSES, n. plu. *bās'ĕs* [F. *basse*, low—from It. *basso*, low, deep]: the lowest part in a harmonized musical composition: ADJ. low; deep; grave. BASSIST, n. *bās'ĭst*, in *music*, a singer of bass. BASS-CLEFF, *bās-klĕf*, the character placed at the beginning of the staff containing the bass part of a musical composition. BASS-SINGER, one who sings the deepest or lowest part in music. See BASE, in Music.

BASS, n. *băs*, [Dut. *bast*, bark or peel: Dan. *baste*, to bind: W. *basg*, a plaiting]: a mat made of bast; a door-mat; a hassock or cushion for kneeling on in church.

BASS, or BASSE, n. *băs* [AS. *bærs;* Dut. *baars*, a perch]: (*Labrax*): genus of sea-fishes of the Perch (q. v.) family, distinguished from the true perches (*Perca*) by having the tongue covered with small teeth. The species are found on the shores of Europe and America. The only British

one is the Common B. (*L. lupus*), which in its fins, scales, etc., much resembles a perch, but has a more elongated form. It is a voracious fish, and was called by the Romans *lupus* (wolf).

The sea-bass have been constituted a family *Serranidæ*, though 'the most typical among the Percoid fishes.' One feature is the anal spines, three, instead of less as in the perch family restricted. The Striped B., or Rock-fish, Nova Scotia to La. (*Roccus lineatus*), and the White B. (*R. chrysops*) of the Great Lakes and the upper Miss. valley—the latter with several dusky lengthwise stripes instead of 7 to 9 blackish—have the dorsal fins separate; but in the Yellow B. (*Morone interrupta*, referring to broken stripes below and behind) of the lower Mississippi, the dorsals are joined at base. Here comes in the White Perch (*M. Americana*) of the Atlantic coast, ascending streams. The Black Sea-bass (*Centropristis striatus*) has the dorsal fin continuous. All are about 1 ft. long, except the Striped B., which attains 3–5 ft., and is one of the best food-fishes. The Small-mouthed Black B. (*Micropterus dolomien*) and the Large mouthed (*M. salmoides*) both of the United States generally, belong to the Sun-fish family, *Centrarchidæ*, having 4–10 anal spines, and the false-gills small and hidden. The former is a very gamy fish.

BASS, or Basswood: see Lime, or Linden.

BASS, *băs*, Michael Thomas: 1799–1884: b. Burton-on-Trent, Eng.: brewer, head of the great brewing firm of Bass & Co. He was member of parliament for Derby, 1848–83, in the Liberal interest. He expended $500,000 in building and endowing a parish church in Burton, and $185,000 for a free library and public swimming baths and park for the town of Derby.

BASSANO, *bâs-sâ'no:* town of Italy, province of Vicenza, 19 m. n.e. of the city of Vicenza, on the Brenta; on a rising-ground in an extensive plain. It has considerable trade in wine, olives, silk, leather, etc., as well as a great printing establishment. It has numerous churches and fine palaces. One of its gates, the work of Palladio, is greatly admired. It is famous for a victory of Bonaparte over the Austrian field-marshal, Wurmser, 1796, Sept. 8. and was the scene of other battles between the French and Austrians in the wars of that period. Pop. (1902) 15,443.

BASSA'NO (properly, Giacomo da Ponte): 1510–92, b. Bassano, in the n. of Italy: artist of great eminence, educated in the principles of his art first by his father, Francesco, himself a painter of merit, he became at Venice a pupil of Bonifazio Veneziano. Here a study of the designs of Parmegiano, Titian, Tintoretto, and others, kindled a rich and emulative enthusiasm in B.; and his earlier works display a loftier genius, as regards both conception and execution, than at a later period. His principal effort, of this higher epoch, is a fresco on the front of the house of the Michelli family. It represents Samson

destroying the Philistines; the figure of the mighty Israelite being considered not unworthy of Michael Angelo. After his father's death, he returned to Bassano, where he practiced a simpler style of art. From this time, however, dates his celebrity. He may even be said to have founded a school, whose peculiarity was the delineation of common things, markets, fairs, country inns, farm-yards, etc. He had a passion for introducing cattle into his pictures, even under the most inappropriate circumstances. The special merits of this lower style, into which B. finally lapsed, are its vigorous and picturesque coloring, and its accurate imitation of nature. B.'s landscapes, however, betray a comparative ignorance of perspective. Occasionally, during his later years, B. showed that his early love of the sublime was not wholly extinguished, by painting several altar-pieces, which have a noble grandeur of execution, such as the *Entombing of Christ*, in the church of St. Maria, Padua; a *Nativity*, now in the Louvre, Paris; *St. Roche interceding with the Virgin for a People infected with the Plague*, at Vicenza; *The Wise Men's Offering*, and the *Seizure of Christ in the Garden*. His rural pictures are numerous in the Italian galleries and in English collections. B. also painted heads of several of his contemporaries, Tasso, Ariosto, etc., and was in high favor with the Emperor Rudolph II., for whom he executed several works. He left four sons, all painters, but not marked by originality.

BASSE-CHANTANTE, *bâs-shăng-tănt*, in Music: the higher of the two bases in a score, partaking of more melody and performed by the violoncello.

BASSE CONTRAINTE, *băs-kong-trangt*, in Music: a French term, meaning a bass melody of a few bars repeated throughout the piece, while the other parts vary.

BASSEIN, *bâs-sān'*: city in British Burmah, cap. of a dist.; on the left bank of the Bassein river, one of the mouths of the Irrawaddy; lat. 16° 45′ n, long. 94° 50′ e. Though 90 m. from the sea, yet it is easily and safely accessible to the largest ships. In a military view B. is important, as it completely commands the navigation of the stream. It was captured by the British 1852. Pop. (1901) abt. 30,000.

The dist. of B. in the recently constituted division of Irrawaddy has 7,047 sq. m.; pop. abt. 310,000.

BASSEIN: city in the province of Bombay, on the island of B.; lat. of the island, 19° 20′–19° 28′ n., long. 72° 48′–72° 54′ e. It appears the mere wreck of former grandeur having been found by Bp. Heber, 1825, with many churches and convents, to be altogether uninhabited and desolate. In 1534, it was ceded to the Portuguese; in 1765, after a possession of 231 years, it was wrested from them by the Mahrattas; in 1780, it surrendered to the British, after a regular siege of twelve days. The island, which contains about 35 sq. m., is separated from the continent by

a narrow channel, which the Portuguese valued as a shelter for shipping. Historically, B. is of some interest, having been promised, though never delivered, as part of the dowry of Charles II.'s Portuguese consort. Pop. abt. 11,000.

BAS'SES: two ledges of rocks s.e. of Celyon, distinguished as *Great* and *Little*—the former group more to the s.w., the latter more to the n.e.; n. lat. 6° 11′–6° 26′, in e. long. 81° 40′–81° 59′. Their importance arises merely from their position in a great thoroughfare of traffic.

BASSET, n. *băs'sĕt* [see BASIL 1]: a miner's term for the outcrop or surface edge of any inclined stratum. V. to incline in a direction toward the surface of the earth, as a stratum or seam of coal. BAS'SETING, imp.; N. the rise of a vein of coal to the surface of the earth; the cropping out of coal in the direction contrary to its dip. BAS'SETED, pp.: spelt also with *tt*.

BASSET, n. *băs'sĕt* [F. *bassette*]: a game at cards invented at Venice; a kind of wind instrument like a clarionet.

BASSE-TERRE, *bâs-tär'*: French term, equivalent to the English *Lowlands*, or rather, *Lowland*, appropriately applied to several localities in the West Indies.—1. The capital of St. Kitt's on the west coast, lat. 17° 17′ n., long. 62° 42′ w.: it is a low, hot dusty place, standing at the outlet of a lovely valley of the same name. Its trade, as the port of the island, is considerable. The designation of the valley and town is a memorial of the former occupation of the half of St. Kitt's by the French. Pop. abt. 9,000.—2. The cap. of Guadaloupe, giving its name to the larger of the two islets into which Guadaloupe is divided by an arm of the sea, known as Salt river. B. stands on the s.w. coast, lat. 16° n., long. 61° 44′ w., having nothing worthy of the name of harbor, but merely a roadstead. Pop. abt. 9,500.—3. The chief town of Marie Galante, a dependency of Guadaloupe, which is about 12 m. to the n.w.: otherwise ambitiously called Grand Bourg.

BASSET-HORN, *băs'sĕt hŏrn:* a wooden wind-instrument (called also CORNET by reason of its curvature), believed to have been invented in Passau in 1770. It was afterward perfected by Theodore Lotz in Presburg. It is, properly considered, an enlarged clarinet; and, notwithstanding the difference of its form, it resembles that, not only in its qualities and tone, but also as regards its intonation, the mode of holding it, and fingering; so that every clarinet player can perform on it. Besides the mouthpiece it is formed of five pieces—the head-piece, two middle pieces, the trunk, and the bell, the last of which is usually of brass. It differs from the clarinet chiefly in having four additional low keys worked by the thumb of the right hand. Its compass is three and a half octaves, from lower F in the bass to double C of the treble.

BASSET-HOUND: a dog with many hound-like characteristics, somewhat used for rabbit-hunting, clumsy in

shape, and allied to the dachshund (q. v.). Its head is as massive and solemn-looking as that of a bloodhound, which it also resembles in the length of its ears. Its body is as bulky as that of a foxhound, to which it is also similar as regards color, hair and form, save that its fore legs are but four inches high and crooked at the knee. Below this point is a wrinkled ankle terminating in a massive paw, each toe of which stands out distinctly. Its coat is short, smooth, and fine, with the gloss of a thoroughbred racehorse; and its colors are black and white and tan.

BAS'SETT, JAMES, American missionary: b. Hamilton, Canada, 1834, Jan. 31. He was graduated at Wabash College 1856, and at Lane Theological Seminary 1859; was chaplain in the Union army 1862–3; and later pastor of Presbyterian churches in Newark and Englewood, N. J. In 1871 he went to Persia as a missionary, and in a short time acquired such a familiarity with the language that he composed a volume of hymns in Persian, *Teheran* (1875; 1884). Other of his writings are: *Among the Turcomans* (contributed to the *Leisure Hour*, 1879–80); *Note on the Simnuni Dialects* (*Journal of the Royal Asiatic Society*, 1884); *Persia, the Land of the Imams.* (N. Y. 1886). He has also translated the Gospel of St. Matthew in Gaghatti Tartar (London 1880).

BASSETT, *băs'sĕt*, JOHN SPENCER, American historian: b. Tarboro, N. C., 1867, Sept. 10. He was graduated at Trinity College, Durham, N. C., in 1888, and took Ph. D. at Johns Hopkins in 1894. His works include *Constitutional Beginnings in North Carolina; Slavery and Servitude in the Colony of North Carolina: Anti-Slavery Leaders of North Carolina; Slavery in the State of North Carolina; The War of the Regulation; The Federalist System* (1905); etc. In 1906 he was made prof. of history at Smith College.

BASSFORD, *băs'fŏrd*, WILLIAM KIPP, American musician: b. New York, 1839, April 23. He has composed many songs and pianoforte numbers: as, Mass in E flat (1894), and a two-act opera, *Casilda*, still in manuscript. He completed the opera *Estrella*, left unfinished by the composer, William Vincent Wallace, at his death.

BASSETTO, n. *băs-sĕt'tŏ* [It.]: small bass viol.

BASSIA, *băs'sĭ-a:* genus of plants of the nat. ord. *Sapotaceæ* (q. v.). The species are trees, tropical or subtropical, the flowers of which are remarkable for their fleshy corolla, and for the abundance of oil or butyraceous fat which the seeds contain, and which is used for many purposes. The fruit has a pulpy rind, and 3 or 4 one-seeded. cells. The ovary has 8 cells; but some are always abortive. The BUTTER-TREE, described by Mungo Park as growing in the interior of Africa, in the country of Bambarra, has been supposed to belong to this genus, and named *B. Parkii.* According to the eminent botanist Robert Brown, however, the seed of the butter-tree, as figured by Park, scarcely belongs to the genus B., but rather to the nearly

allied genus *Vitellaria* or *Lucuma*. It produces the *Galam Butter*, also called *Shea Butter* (i. e., Tree Butter), which is highly valued, and is an important article of commerce in the interior of Africa. The seeds of the fruit, which resembles an olive, are dried in the sun, or in a peculiar kind of oven, and the kernels are then boiled in water, in order to obtain the butter from them, which not only keeps for a year without salt, but is also whiter, more solid, and more pleasant to the taste than butter of cows' milk. This butter is used as both food and medicine. The MADHUCA, MAHWA, or MAHOWA Tree of the East Indies (*B. latifolia*), is described as resembling a good oak in size, and is a valuable timber-tree. It is found in the mountainous parts of the Circars, Bahar, Bengal, etc. Its flowers are eaten raw, and a kind of arrack or spirit is distilled from them. The seeds yield, by expression, a considerable quantity of a concrete greenish-yellow oil, used for lamps, and occasionally for frying articles of food.—The Indian BUTTER-TREE, or PHULWARA or FULWA Tree (*B. butyracea*), is found in some mountainous parts of India, and attains a height of 50 ft. Its timber is light and of no value. The leaves are 6–12 inches long. The fruit is the size of a pigeon's egg, and although eaten, is not much esteemed; but from the seed, a concrete oil or butter is obtained, by expression, of a delicate white color, much valued for medicinal uses, and as an unguent.—The seeds of the ILLUPIE-TREE, or Indian OIL-TREE (*B. longifolia*), native of Coromandel, yield a large quantity of oil, which is used for lamps, for soap-making, and in cookery The flowers are much esteemed for eating; and the wood is almost as hard and durable as teak.

BASSIM, *băs'ĭm:* town of India, dist. of B., province of Berar. Pop. abt 10,000.

BAS'SINET, n. *băs'sĭ-nĕt* [from *basin*]: steel cap like a helmet.

BASSINETTE, n. *băs'sĭ-nĕt'* [F.]: a wicker basket, with a covering or hood over one end, in which young children are placed as in a cradle.

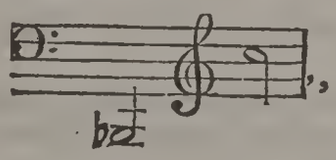
BASSO-CONTINUO, *băs'sō cŏn-tĭn-ū'ō* [It. *basso*, low, deep; *continuo*, continual]: continued bass; a bass part with the corresponding chords indicated by figures set above or below the notes; hence called also '*figured bass.*' BASSO-RIPIENO, n. *băs'sō-rē-pē-ā'nō* [It. *basso; ripieno*, full, filled]: the bases of the grand chorus, which comes in only occasionally.

BASSOMPIERRE, *bâ-sōn-pe-ăr'*, FRANÇOIS DE, Marshal of France: 1579–1646; b. Harouel, in Lorraine. Belonging to one of the oldest French families, he came, at the age of 20, to the French court, where he gained the favor of Henry IV. After the murder of Henry IV., he attached himself to the party of the queen, who appointed him col. of the Swiss Guards; but on the murder of Concini, he sought to establish himself in the favor of the young king, and when the quarrel broke out between mother and son, he particularly contributed to the overthrow of the former. He was raised to the rank of Marshal of France 1622; was sent on em-

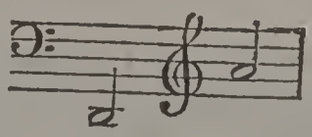
bassies to Spain, Switzerland, and England; was actively employed in the seige of La Rochelle; took the pass of Susa by storm, 1629: and commanded for a little while the troops raised in Languedoc against the Huguenots. He became, however, an object of suspicion and dislike to Richelieu, who caused him to be cast into the Bastile, 1631, Feb., from which he was not liberated until the death of Richelieu, 1643. He was an accomplished courtier, extravagant, and excessively addicted to gallantries. At the time of his arrest, he destroyed 6,000 love-letters. His *Mémoires* (2 vols., Cologne, 1665; 4 vols., Amst. 1723), written in the Bastile, are rendered interesting by their spirited style.

BASSOON, n. *băs-sôn'* [F. *basson*—from It. *bassone*—from *basso*, low or deep]: in *music*, a bass wind-instrument, consisting of a very long tube and a reed for the admission of the wind: made of maple-wood or plane-tree. BASSOON'IST, n. a player on.

The bassoon is an Italian invention; its Italian name *fagotto*, meaning *a bundle*, probably from its being made in different pieces laid one against the other. The French call it *Basson de hautbois;* the Germans retain its Italian name. Its invention is attributed to Canonicus Afranio, in Ferrara, 1539. In the middle of the 16th c., it had already reached great perfection. Sigmund Schnitzer, in Nürnberg, was a celebrated maker. The B. consists of a bored-out tube of wood in several pieces, fixed together alongside each other, so as to bring the holes and keys within the reach of the fingers of each hand. The B. has, in general, not less than 8 holes and 10 keys. In the narrow end of the wooden tube is fixed a small tapering brass tube in the form of an S., on the end of which is placed the reed for producing the tone. The compass of the B. is from



, on newer instruments as high as F., but the best tones are those

from 

. The lowest C sharp, and B natural, are wanting. The notes for the B. are written on the bass clef for the lower part, and on the tenor clef for the higher. The best keys for the B. are E flat, B flat, F, C, G, D, and A; the other keys are difficult. It is scarcely known as a solo instrument, though there is some music for it as such; but it bears an important part in the orchestra. The double B. (*contra-fagotto*) is an octave lower. B. is also the name of an organ-stop, the pipes of which are made to imitate the tones of the instrument.

BASSORA, *bâs' so-râ*, or BUSSORA, or BASRAH: town of Asiatic Turkey, pashalic of Bagdad; on the w. bank of the Euphrates, here called the Shat-el-Arab, about midway between the mouth of the Tigris and the Persian Gulf, from

which it is 55 m. distant. Lat. 30° 30′ n., long. 47° 34′ e. The river, navigable up to B. for ships of 500 tons, is there divided into a number of channels, and by evaporation and frequent over-flowing, makes the climate very unhealthful. The people are for the most part poor Arabs and Persians; the officials and military alone are Turks. Commerce is in the hands of Armenians. An extensive trade is carried on in the exchange of the productions of Turkey and Persia with those of India, also in European goods, particularly articles of British manufacture. Among the exports are horses, and dates which are grown in great abundance. Caravans travel to Persia, and also by Bagdad and Aleppo to Constantinople. It has steam communication with Bombay and Bagdad. B. was founded in 636 by the Caliph Omar, and soon became one of the most famous and opulent cities of the East. The possession of it has been the subject of many contests between the Turks and the Persians. It is a place of great note in the history of Arabic literature. Pop. abt. 50,000.

BASSORA GUM: a whitish or yellowish-opaque substance resembling gum-arabic, but differing from it by being mostly insoluble in water. Its source has not been satisfactorily ascertained.

BASSO-RILIE′VO: see ALTO-RILIEVO.

BASSORIN, n. *băs′sŏ-rĭn* [first discovered in *bas′sora gum:* probably name adopted from *Bassora*, near Persian Gulf]: a substance obtained by treating a gum-resin successively with ether, alcohol, and water; a kind of gum insoluble in water, abundant in linseed, quince-seed, and many roots; gum tragacanth.

BASS-RELIEF, n. *băs′rē-lēf′* [It. *basso, low*; *rilevare*, to raise again]: sculptured figures that do not stand far out from the surface; when they stand far out they are said to be in ALTO-RILIEVO. MEZZO-RILIEVO is a middle or demi-relief. It. BASSO-RILIEVO, *băs′sŏ-rē-lē′vō*, and F. BAS-RELIEF, *bâ′rē-lēf′*, are used in same sense as BASS-RELIEF. See ALTO-RILIEVO.

BASS ROCK: remarkable island-rock near the mouth of the Firth of Forth, about 2 m. from Canty Bay, Haddingtonshire, opposite the ruined castle of Tantallon. It is composed of hard granular greenstone or clinkstone, and is about a mile in circumference, nearly round, and 420 ft. high. It is inaccessible on all sides except the south-west, where it shelves down to the water, and there the landing is difficult, and almost impossible, when there is any swell. On the w., n., and e., the precipices rise perpendicularly out of the sea, to a great elevation. These are the abode of immense numbers of solan geese and other aquatic birds, which give to the surface of the precipices a snowy appearance in the distance. A cavern traverses the rock from w. to e., accessible at low tide. A few sheep are pastured, the mutton of which is much prized. How early the Bass was tenanted, is doubtful; but there is a tradition to

the effect that St. Baldred resided on it as early as the 7th c. It is also not very certainly known when the Bass was first fortified, but it formed a retreat for the son of Robert III., afterwards James I. of Scotland, before his nineteen years' captivity in England. James VI. visited the B. 1581, and was anxious to obtain it for state purposes; but its owner, 'Lauder of the Bass,' refused to part with it. The Registers of the Church of Scotland were sent to the B., 1651, for preservation from Cromwell; but the Protector forced their surrender in the following year. In 1671, Charles II. purchased the rock for £4,000, and within its dreary dungeons many of the most eminent of the Covenanters were confined during that and the following reign. It is a noticeable fact, that the Bass was the last spot in the British Islands which held out for the Stuarts. A mere handful of adventurers in the Jacobite interest, 24 in number, captured the island, and retained it in name of King James, from 1691, June, till 1694, April, against all the forces which the government of William III. sent against them; at last, the spirited little garrison surrendered on honorable terms, and only by reason of failing provisions. In 1701 the fortifications were demolished by order of William III. Five years afterwards, the Bass passed into the possession of Sir Hew Dalrymple, to whose lineal descendant it now belongs. The B. is let to a 'keeper,' who pays a considerable sum for it annually, the rent being made up by young geese, which are used as food; by eggs, feathers, and oil; also by fees exacted from visitors to the rock.

BASS STRAIT: a wide ocean passage separating Tasmania from Australia. It contains many islands, chiefly in its s. section, and is greatly beset by coral-reefs. It runs almost due e. and w., has an average breadth of about 140 m. and is nearly bisected by the parallel of 40°.

B. S. deservedly bears the name of its explorer, a surgeon in the British Navy, who, without having been professionally a seaman, is entitled to a very high place among maritime discoverers. After having made shorter excursions from Port Jackson, in a mere wherry of 8 ft. in length, George Bass resolved to settle, in a whaling-boat, the question as to the connection or separation of Australia and Tasmania. In his frail craft, he penetrated as far as Western Port, near the entrance of Port Phillip, where, from the trending of the land and the swell of the sea, he inferred that he had probably reached the open ocean. He did not rest contented, however, until, in a tiny bark of 25 tons, he actually circumnavigated Tasmania. The discovery, so deliberately prosecuted, and so satisfactorily completed, was soon fertile of results; for in 1802, only four years after the exploration of Bass, Port Phillip was entered; in 1804, Tasmania was colonized; and now the strait is the highway for a large annual trade between Victoria and Tasmania.

BASSUS, n. *băs'sŭs* [L. *Bassus*, a proper name]: genus of

hymenopterous insects, belonging to the family *Braconidæ*. They have long narrow bodies, and frequent unmbelliferos flowers.

BAST, n. *băst* [Dut. and Dan. *bast*, bark, peel: Sw. *basta*, to bind], (proper spelling of BASS, a mat); called *Inner Bark, Liber*, or *Endophlœum* (see BARK): the fibrous inferior layer of the bark in the stems of exogenous plants; the *Bast-tissue*, particularly conspicuous in exogenous trees, as a peculiar substance interposed between the true bark and the wood. It consists in great part of sap-vessels (laticiferous vessels (see LATEX and SAP) lying close together, and assuming the appearance of tough fibres. In a fresh state, it has generally a whitish color; and it is often composed of several layers, to which, however, the collective name of B.-layer is often applied. The uses of this part of plants in the arts are very numerous; the fibres of hemp, flax, jute, etc., are nothing else than bast. The name B., however, is more commonly applied to the inner bark of trees, and is originally Russian, designating the inne bark of the lime-tree (q. v.) or linden-tree, which is employed for making a coarse kind of ropes, mats well known as B.-mats, and a kind of shoes much worn by the Russian peasantry. The trees are cut when full of sap in spring. For B. to be plaited into shoes, young stems of about three years old are preferred; and it is said that two or three are required to make a single pair of shoes. Trees of six or eight years old are cut down for the better kind of mats, exported in large quantities from Russia, particularly from the port of Archangel, much used for packing furniture, for covering tender plants in gardens, supplying strands with which plants are tied, etc. The trees from which the B. is taken are generally burned for charcoal. After the bark is dried, its layers are easily separated by steeping in water. The finest layers are the inner.—The manufacture of B.-mats is nearly confined to Russia and Sweden. Lime-tree B. is used in the s. of Europe for making hats. The inner bark of *Grewia didyma*, a tree of the same nat. ord. with the lime-tree, is used for making ropes in the Himalaya Mountains.

BASTA, *impera, băs'tă* [It.]: in *music*, enough; stop—used by the leader of the band.

BASTARD, n. *băs'tĕrd* [OF. *bastard;* OE. *baste*, fornication: Gael. *baos*, or *baois*, lust—from OF. *bast*, a pack-saddle]: a child born out of wedlock; anything spurious: ADJ. spurious; not genuine; illegitimate; false; applied to metallic ores containing a very small percentage of metal, or to an impure mineral as bastard-ironstone, bastard-limestone. BAS'TARDISM, n. *-dĭzm*, the state of being a bastard. BASTARDIZE, v. *băs'ter-dīz'*, to prove to be a bastard; to reduce to the condition of a bastard. BAS'TARDI'ZING, imp. BAS'TARDIZED, pp. *-dīzd*. BAS'TARDLY, a. or ad. *-lĭ*. BASTARDY, n. *băs'ter-dĭ*, state of being illegitimate. BASTARD BAR, in *Heraldry*, the half of the scarp; in popular speech often called *Bar Sinister* (q. v.): see also GOBONY.

BASTARD EIGNE: name given in English law-books to an eldest son illegitimate by birth, but whose father and mother were subsequently married, and had other children born in wedlock. See BASTARDS AND BASTARDY.

BAS'TARDS AND BAS'TARDY: terms applied to persons of illegitimate birth. Bastards, as described, by Blackstone, are such children as are not born either in lawful wedlock, or within a competent time after its determination. Under the common law in Blackstone's day this was an adequate definition, though, under changes in laws since, this definition fails to include children born in wedlock yet not children of the mother's husband. The Scotch lawyers, true to their peculiar law of marriage, define a bastard as a child born of a woman, who was not married to the father at the time of conception, *and who was never thereafter married to him.* It was at one time the law of England, when divorces *a mensa et thoro* were adjudged by the ecclesiastical courts, that if the wife had children during the legal separation occasioned by the former kind of divorce, such children were *primâ facie* bastards—for the law presumed the parties to live conformably to the sentence of separation. But in modern times the presumption has changed, and now always favors legitimacy.

In the United States, by the civil law and statute law of many of the states, a subsequent marriage of the parents legitimates children born prior thereto. It is thus in the following states: Alabama, Georgia, Illinois, Indiana, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Mississippi, Missouri, Ohio, Pennsylvania, Vermont, and Virginia, the provisions varying somewhat, but not materially, in different states. A child is a bastard if born during coverture under such circumstances as to make it impossible that the husband of his mother can be his father; but a strong moral impossibility, or such improbability as to be beyond a reasonable doubt, is also held sufficient. A child is likewise a B. if born beyond a competent time after the coverture has determined. The principal right which a bastard has is that of maintenance at the hands of his parents, which may be secured by the public officers who would be charged with the support of the child, or in some cases, by the mother. In many of the states, by statute, bastards can inherit from and transmit to their mothers real and personal estate under some modifications.

See LEGITIMACY: SEPARATION: DIVORCE: MARRIAGE: INHERITANCE: FEE-SIMPLE: SUCCESSION: ULTIMUS HÆRES: VAGRANTS: and SEMIPLENA PROBATIO.

BASTARD-WING, n: three or four quill-like feathers in front of large quills at the wrist-joint, in birds.

BASTE, v. *bāst* [F. *baston* or *bâton*, a stick: Icel. *beysta*, to beat: Sw. *bösta*, to thump: Gael. *baist*, to immerse]: to beat with a stick; to moisten meat with fat while roasting, to hinder it from burning. BA'STING, imp. BASTED, pp. *bā'stĕd*. BA'STER, n. one who.

BASTE, v. *bāst* [It. *basta*, a long stitch: Sp. *bastear*, to sew slightly; F. *batir;* OF. *bastir*, to stitch]: to sew with long stitches to keep the pieces of a garment in shape while it is being permanently sewed. BA'STING, imp. BA'ŞTED, pp.

BASTI'A: former cap. of Corsica, picturesquely situated on the slope of a mountain, rising from the sea in the form of an amphitheatre, in the n.e. part of the island; lat. 42° 42′ n., long. 9° 27′ e. The streets are narrow and crooked. It has a harbor for small vessels, defended by a mole, at the mouth of which is a rock resembling a lion couchant, and designated 'Il Leone.' There is considerable trade in leather, skins, wine, oil, figs, and pulse; and many stilettos and daggers are manufactured. B. was founded 1383 by the Genoese Leonel Lomellino, and was the seat of the Genoese government for 400 years. When Corsica was divided into two departments, B. was made the capital of one; but when both were made into one in 1811, the seat of government was transferred to Ajaccio. Bastia is still, however, the commercial and industrial capital of the island and a United States consul is stationed here. Pop. (1900) 22,522.

BASTIAN, *bâs'tē-ân*, ADOLF, German traveler and anthropologist; b. Bremen, 1826, June 26. He has made extended journeys throughout Australia, Asia, America, and West Africa at various periods of his career, and his explorations have been prosecuted in such widely sundered countries as Yucatan, New Zealand, and Persia. At the age of 70 he started on an exploring voyage to the Malay Archipelago. He has been professor of ethnology in the University of Berlin, director of the Museum für Völkerkunde, and in 1901 became editor of the *Ethnographisches Notizblatt*, published in Berlin. His nearly 60 works deal with the various aspects of anthropology, his range being broad and his services in behalf of science of the greatest value. Among his many volumes may be named *Der Mensch in der Geschichte* (1860); *Ethnographische Forschungen* (1871–3); *Der Buddhismus in seiner Psychologie* (1882); *Der Fetisch an der Küste Guineas* (1884); *Vorgeschichtliche Schöpfungslieder* (1893); *Die Nikronesischen Kolonien* (1899–1900); *Die Völkerkunde und der Völkerwerkehr* (1900).

BASTIAN, *băs'tyăn*, HENRY CHARLTON, English physician and biologist; b. Truro, 1837, April 26. He obtained the degree of M.A. in 1861 from the University of London, graduating subsequently in medicine at the same university. In 1864–6 he was a medical officer in Broadmoor Criminal Lunatic Asylum, and in the latter year was appointed lecturer on pathology and assistant physician in St. Mary's Hospital. In 1867 he became professor of pathological anatomy in University College, and in 1878 he was also appointed professor of clinical medicine. In 1887–95 he was professor of the principles and practice of medicine. Apart from numerous contributions to medical and other

periodicals, and to Quain's *Dictionary of Medicine*, his works include *The Modes of Origin of Lowest Organisms* (1871); *The Beginnings of Life* (1872); *Evolution and the Origin of Life* (1874); *Lectures on Paralysis from Brain Disease* (1875); *The Brain as an Organ of Mind* (1880), which has been translated into French and German; *Paralysis: Cerebral, Bulbar, and Spinal* (1886); *A Treatise on Aphasia and other Speech Defects* (1898); *Studies in Heterogenesis* (1904); *The Nature and Origin of Living Matter* (1905). He is a recognized authority in the pathology of the nervous system and an advocate of the doctrine of spontaneous generation.

BASTIAT, *bâs-tē-â'*, FRÉDÉRIC: 1801, June 29–1850, Dec. 24; b. Bayonne, France; son of a merchant. He entered the commercial house of one of his uncles at Bayonne, and employed his leisure hours in the study of political economy. Circumstances called him into Spain and Portugal in 1840, where he availed himself of the opportunity to study the customs and institutions of the two countries. In 1844 he published, in the *Journal des Économistes*, an article 'On the Influence of French and English Tariffs on the Respective Futures of the two Peoples.' It contained in germ B.'s theory of political economy; and from that moment, he took his place as a decided opponent of the system of protective tariffs. Subsequently, in the same journal, he combated the economic principles of Socialism and the rights of labor. During a visit to England, he made the acquaintance of Cobden, and on his return to France, he translated (1845) the speeches of the free-traders, which he published with an introductory preface, entitled *Codben and the League, or the English Agitation in Favor of Free Trade*, in which he gathered up into one solid mass the inconveniences of the protective system. B. now went to reside in Paris, where he became sec. of the societies, and chief editor of the journal, advocating the principles of free trade. After the revolution of 1848, he was elected successively a member of the constituent and legislative assemblies. In 1850, he came forward as the antagonist of the Socialist writer, Proudhon. Suffering from pulmonary disease, he repaired to Italy for change of climate, but died at Rome.

Besides the writings mentioned B. published *Sophismes Économiques—Propriété et Loi, Justice et Fraternité—Protectionisme et Communisme, Harmonies Économiques*, and several other important tractates, all of which exhibit extensive knowledge of the subjects discussed, convincing logic, and a power of sprightly and biting satire. The *Harmonies Économiques* was translated into English by Stirling (1860). B.'s principles are now probably prevalent in France.

BASTIDE, *bâs-tēd'*, JULES: 1800–79, March 3; b. Paris: French journalist and politician, minister of foreign affairs in 1848, and member of the constituent assembly. In 1821, he became one of the first members of the French Carbonari; and after the July revolution, he was conspicuous

among the writers of the radical opposition. On the reconstitution of the National Guard B. was elected commandant-in-chief of the legion of artillery, in which the republicans were grouped, and took part in two insurrectionary movements, for the second of which—the *émeute* at Paris, 1832, June 5, he was condemned to death, but escaped to London. Pardoned 1834, he returned to Paris, and wrote political articles for the *National*, and in 1847 he founded the *Revue Nationale*. During the revolution of 1848, he was a supporter of General Cavaignac, and an opponent of Socialism. In 1858 he published *La République Francaise et l'Italie en* 1848; and in 1859, *Guerre de Religion en France*.

BASTIEN-LEPAGE, *bâs-tē-ân'lĕ-pâzh*, JULES, French painter: b. Damvilliers, 1848, Nov. 1; d. 1884, Dec. 10. He studied under Cabanel, and early began to attract notice by his impressionist pictures in the Salon. Some of his more important works were *In Spring, The First Communion, The Shepherds, The Potato Harvest, The Wheat-field, The Beggar,* and *Joan of Arc Listening to the Voices*. His most striking portraits were those of his grandfather, his father and mother, Sarah Bernhardt, André Theuriet, and the Prince of Wales. He was made a chevalier of the Legion of Honor in 1879. See Theuriet, *J. Bastien-Lepage, l'homme et l'artist* (1885).

BASTILE, n. *băs-tēl* [F. *bastille*—from *bastir*, to build]: a castle or prison; a fortress defended by towers or bastions; in *OE.*, a temporary wooden tower, used in naval and military warfare. The famous prison of state, known as the Bastile in Paris, was originally the castle of Paris, and was built by order of Charles V., ketween 1370 and 1383, by Hugo Aubriot, Prévôt or Provost of Paris, at the Porte St. Antoine, as a defense against the English. Afterward, when it came to be used as a state-prison, it was provided, during the 16th and 17th centuries, with vast bulwarks and ditches. On each of its longer sides the B. had four towers, of five stories each, over which there ran a gallery armed with cannon. It was partly in these towers, and partly in cellars under the level of the ground, that the prisons were situated. The B. was capable of containing 70 to 80 prisoners, a number frequently reached during the reigns of Louis XIV. and Louis XV. Though small compared to the number which an ordinary prison contains, these numbers were considerable, when we reflect that they rarely consisted of persons of the lower ranks, or such as were guilty of actual crimes, but of those who were sacrificed to political despotism, court intrigue, ecclesiastical tyranny, or had fallen victims to family quarrels—and were lodged here in virtue of *lettres de cachet* (q. v.)—noblemen, authors, savans, priests, and publishers. On 1789, July 14, the fortress was surrounded by an armed mob, which the reactionary policy of the court had driven into fury, and to the number of which every moment added. The garrison consisted of 82 old

soldiers and 32 Swiss. The negotiations which were entered into with the governor led to no other result than the removal of the cannon pointed on the Faubourg St. Antoine, which by no means contented the exasperated multitude. Some cut the chains of the first drawbridge, and a contest took place, in which one of the besieged and 150 of the people were killed, or severely wounded; but the arrival of a portion of the troops which had already joined the people with four field-pieces, turned the fortune of the conflict in favor of the besiegers. Delaunay, the governor —who had been prevented by one of his officers, when on the point of blowing the fortress into the air—permitted the second drawbridge to be lowered, and the people rushed in, killing Delaunay himself and several of his officers. The destruction of the B. commenced on the following day, amid the thunder of cannon, and the pealing of the Te Deum. This event, in itself apparently of no great moment, leading only to the release of three unknown prisoners—one of whom had been its tenant for thirty years—and four forgers, and in which it is said only the 654 persons whose names now appear on the column in the Place de la Bastille, took part, nevertheless finally broke the spirit of the court-party, and changed the current of events in France.

BASTINADO, v. *băs'tĭ-nā'dō*, or BASTINADE, v. *băs'tĭ-nād'* [Sp. *bastonada*, a blow with a stick: F. *bastonnade*—from Sp. *baston*, a stick: It. *bastonnāta*]: to give a sound beating to with a stick: N. the punishment among eastern nations in which the offender is beaten with a stick or cudgel, especially on the soles of the feet. BAS'TINA'DING, imp. BAS'TINA'DED, pp.

BASTION, n. *băst'yŏn* [Sp. and F. *bastion*—from It. *bastione:* F. *bâtir*, for *bastir*, to build]: a mass of earth built as a wall and faced with sods or bricks, standing out from a fortified work to protect its walls; a permanent fortification consisting of two faces forming a salient angle or arrow-point BASTIONED, a. *băst'yŏnd*, furnished with bastions.

The B. is one of the principal defense-works in a fortified place. It is a kind of tower, very broad in relation to its height. The plain wall called the *curtain*, which often surrounds a fortified town, is usually a polygon of many sides; and in that case, bastions occupy all, or nearly all the salient angles. Bastions are mostly five-sided; the two outermost sides are the *faces*, meeting in an angle towards the enemy; the two on either side of these are the *flanks*, meeting two curtains or portions of wall; and the fifth side, open to the interior of the fortified place, is the *gorge*. Bastions may be regarded as projections, which enable the defenders to watch the approach of the enemy to the foot of the wall, and to frustrate them by a flanking fire. Taking the average range of modern ordnance and muskets as a basis, engineers decide on a distance of 300 to 400 yards between B. and B. The length of each face and flank of a B. is so regulated, that two bastions can defend each other and the intermediate portion of wall. The main substance of a B. is an immense mound of earth, capable of supporting heavy

guns, and of receiving the fire of the enemy; but it is faced and strengthened in many parts with brick and stone. The top is broad enough to allow room for the large guns, and for infantry and artillery soldiers. A *hollow* B. has the space within it kept down to the level of the town or natural ground; but a *solid* B., filled up to the top with firm materials, is considered to be the best defensive construction. Vauban devised the plan of having large *detached* bastions opposite the chief angles of the place, with a ditch behind each; a tower or small B. being placed at the real angle of the wall behind. See FORTIFICATION: SIEGE.

BASTITE, n. *băs'tīt* [Ger. *bastit*—from *Baste,* in the Harz Mountains, where first discovered]: a mineral, called also *Schiller Spar;* altered enstatite (bronzite). Its hardness is 3.5—4; its spec. grav. 2.5—2.76; its luster is like that of bronze, whence the name *Schiller,* in Ger., lustrous.

BASTONITE, *băs'ton-īt* [from *Bastoigne,* in Luxemburg, where found]: a greenish brown or bronze foliated mineral; an altered iron mica.

BASUTOLAND, *ba-sū'tō-lănd:* a rugged country n.e. of the Cape Colony, in south Africa, along the head waters of Orange river; bound by the Orange Free State, Natal, and Cape Colony; 10,293 sq. m. The people, Basutos, are of the great Bantu stock to which the Kafirs (q. v.) also belong; and they are either closely allied to the Betjuans (q. v.) or Bechuanas, or are a subdivision of them. The Bantu races are distinguished on the one hand from Hottentots and Bushmen, and on the other from Negroes. The Basutos are superior to the Kafirs in intelligence and industry, and in appreciation of civilized customs, but inferior in bodily development and warlike qualities. B. is well watered, has a fine climate, and is an excellent grain-producing country. Immense herds of cattle are reared. There are no navigable rivers, but the roads are good. Products are wood, wheat, mealies, and Kafir corn, or Durra, and the chief exports are grain, cattle, and wool. Total exports 1908, $940,000. Basutoland was annexed to Cape Colony 1871; but by the people's urgent request, it was brought under imperial rule 1884, and is governed by a Brit. resident commissioner. The cap. and chief town is Maseru (pop. 1,300). There are a number of schools, mostly missionary. European settlement is prohibited.—Pop. 347,731 natives and 895 whites.

BASYLE, or BASYL, n. *băs'il* [see BASE 2: Gr. *ulē,* the substance of which anything is made]: in *chem.,* a metal which, by union with oxygen, produces a Base (q. v.)—thus lime or calcic oxide is a *base,* but calcium is a *basyle.* Thus all the metals are examples of simple basyles, and ammonium (NH_4), ethyl (C_2H_5), methyl (CH_3), etc., represent compound basyles. Another property which a B. possesses is that it can unite with a salt Radical (q. v.), like chlorine or cyanogen, to form salts. Thus the B. sodium (Na) combines with chlorine to produce a salt—in fact, common salt (NaCl); and mercury (Hg) unites with cyanogen (Cy) to form the salt cyanide of mercury (HgCy)

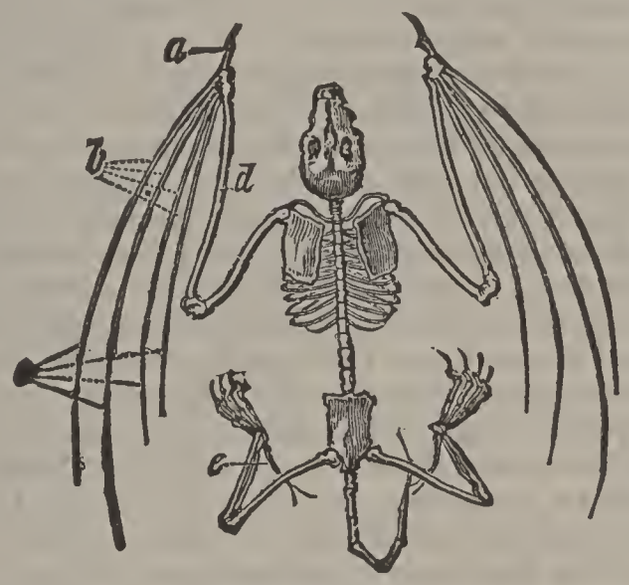
BAT, n. *băt* [It. *battere;* F. *battre,* to beat—from OF *batre*—from mid. L. *batĕrĕ:* Hung. *bot,* a stick: Gael. *bat,* a staff]: a staff, club, or implement for striking; the flat club for striking the ball in cricket; a stick; a piece of wood broader at one end than at the other; cotton in sheets for quilting; a piece of brick: V. to play with a bat at cricket. BAT'TING, imp. N. the management of a bat. BATTED, pp. *băt'tĕd.* BATSMAN, n. *băts'măn,* in *cricket,* the man who holds the bat.

BAT, n. *băt* [*bak,* as the common name of an animal: Scot. *bak, baki,* or *bakie-bird;* Sw. *nattbaka,* the bat or rear-mouse: L. *blatta,* a night-moth: Icel. *blaka,* to flap]: a nocturnal mammal flying by means of large wings formed of a web of skin stretched between the elongated fingers. BAT'TISH, a. like a bat. BAT'FOWLING, a method of catching birds at night by lighting straw or torches and beating the bushes where they roost, which causes them to fly blindly into a net held up for that purpose.

BAT, *băt:* common name of all animals of the class *Mammalia* which are furnished with wings: the order *Chiroptera,* distinguished by great elongation of the fingers, to support the leathery membrane which gives power of flight. The bones are not pneumatic, as in birds; the radius does not rotate on the ulna; the eyes are small, the ears large, and the touch acute. The order is divided into two sections, insectivorous and frugivorous; the first has 5 families: the Leaf-nosed B. of S. Amer.; the Thick-legged B. of both hemispheres; the Horseshoe B. and the Lyre B. of the old world; and the Typical B. (*Vespertilionidæ*), world-wide and common. The large frugivorous bats, *Pteropodidæ,* are called Fox-bats, from their fox-like head; they belong to s. Asia, the E. Indies, Australia, and Africa. Cuvier made the *Galeopithecidæ* (Flying Lemurs, of the Indian Archipelago) a family of *Chiroptera;* but they have only an expansion of skin between the limbs, unsupported by fingers, and useful only as a parachute, as in the case of flying squirrels. They are placed among *Insectivora,* or by some authors in the lemur division of *Quadrumana.*

It is very interesting to compare the organs of flight in bats with those of birds, both as to the points in which they agree, and as to those in which they differ. They beat the air, as birds do, with their anterior members; but the requisite extension of surface is not obtained by quills, but by a great elongation of the arms and fingers, upon which a thin membrane is stretched, folding close to the body by means of their joints, when the wing is not in use. Attention to the accompanying figure of the skeleton of a bat, will show the relation of the bones of a bat's wing to the bones of the human arm and hand, or to the ordinary bones of the anterior extremities in quadrupeds which have fingers or toes. The thumb, *a* (in figure of skeleton), is short, armed with a strong nail, and not at all included in the wing-membrane, nor used in flight. The bones most elongated of all are the metacarpal bones, or bones of

the hand, *b;* the true finger-bones, *c*, are not so much so. The fore-arm, *d*. has not two bones (radius and ulna), but only one (the ulna), with a sort of rudiment of the other; the rotatory motion, of which these two bones afford the means, being not only unnecessary to bats, but at variance with the purpose chiefly designed in this part of their structure, of a powerful stroke in one particular direction. For a similar reason, 'the fingers of this strange hand are incapable of closing towards the palm, as ours do, when grasping an object: their only movements are such as fold up the wing against the side of the body, by laying the fingers close along the side of the fore-arm, as in closing a fan.' Great strength, however, was requisite in the shoulder; and, accordingly, we find an analogy to birds in the size and solidity of the bones in this part, as well as in the thickness of the muscles by which the wings are moved, and still more in the great dimensions of the sternum, or



Skeleton of Bat.

breast-bone, to which they are attached. The sternum is also furnished with a medial ridge, as in birds, for the better attachment of the muscles. The ribs are large; but the other bones generally, as those of the head and the pelvis, are delicate, and appear designed for lightness.—The wing membrane of bats extends along the flanks to the hind-legs, although these aid little in flight; but it is attached to them so as to leave the feet free, which are much like the feet of ordinary small quadrupeds with toes and claws, and are employed with the thumbs of the anterior limbs in creeping upon the ground, in climbing perpendicular rough surfaces, or for hanging with the head downward in that remarkable posture of repose in which bats pass a great part of their lives, and in which they differ from all other animals.

In the greater number of species of B., the wing-membrane extends not only to the hind-legs but beyond them to the tail, which is included in it, a peculiar bone (*e* in fig.

of skeleton) also arising from each heel to afford further support to this part of it, which seems to serve purposes analogous to the tail of birds, acting as a rudder, and enabling the animal to make its rapid evolutions in the air. The fruit-eating bats of tropical regions, which have no need to perform such evolutions, are destitute of this interfemoral part of the membrane; and according to the habits for which each species has been designed, the tails are long or short, entirely included in the membrane, or only for part or their length, or produced a very little beyond it, and terminating in a hard tip, so that the tail is capable of being used to aid in creeping or climbing, evidently possessing considerable power, and being curved and moved in a manner which suggests a slight analogy to the prehensile tails of monkeys.

Bats were placed by Linnæus in his order *Primates*, along with monkeys and lemurs, with which they agree in their pectoral teats and in other characters, particularly of the organs of reproduction. In one genus (*Dysopus*), there is an additional resemblance to the Primates in the partially opposable thumbs of the hind-feet, and a trace of this character is to be found in the fore-thumbs, already noticed. The order Primates is now restricted to man and the anthropoids by those who make such an order—monkeys and the squirrel-like lemurs and flying lemurs being no longer included. The bats that feed on insects and those that feed on fruits exhibit considerable variety both in the number and character of their teeth, as might be expected in animals which differ so much in their food. All of them have four rather large canine teeth; the incisors vary much in size and form, as well as in number. The digestive apparatus exhibits a variety corresponding with that of the teeth; the intestinal canal of the Vampires (q. v.), which live by sucking the blood of animals, proceeding almost in a straight line from one extremity of the body to the other, while that of some of the frugivorous bats, as the Kalong (q. v.) (*Pteropus*) of Java, is seven times as long as the body.

Except in the power of flight and things essential to it, bats have no resemblance to birds. The old English name *Flittermouse*, and the German *Fledermaus*, indicate an early popular recognition of their true place in creation. They are generally nocturnal animals, or, at least, prefer the twilight, although one of the British species may occasionally be seen pursuing insects during winter at mid-day. They generally spend the day in caves, hollow trees, and other dark recesses, often under the roofs of houses, and in crannies of ruined or deserted buildings. They are found in almost all parts of the world, except the very coldest, but are most numerous and of greatest size within the tropics. Those of temperate climates generally spend the winter in a state of torpidity, in which, although circulation continues very languidly, respiration does not ordinarily take place. Upwards of 130 species have been described, and probably the actual number existing is very much

greater. It is not unlikely that some exaggerated accounts of the great bats of warm climates gave rise to the fable of the Harpies, which Virgil introduced into the *Æneid.* The bats of Europe are all small; the body of the largest British one is not so large as a mouse, and the fullest stretch of its wings about 15 inches, while the common British species are much smaller; but in the Kalong, already mentioned, the stretch of wing is 5 ft. Of British species, the largest is the Noctule B. (*Vespertilio noctula*), a very local species found chiefly in the s. of England; it is about the same size as the somewhat rare Gray B. of N. Amer. The commonest species in the e. United States are the little brown B. (*V. subulatus*) and the red B. (*Atalapha noveboracensis*). The foreign Long-eared B. (*Plecotus auritus*) is distinguished by its enormously large and very beautiful ears, which, when it is alseep, are folded up in a remarkable manner under the arm, the long *tragus* then resembling a slender ear. This great development of the ears is characteristic of certain genera of B., that part of the ear called the *tragus* attaining also a remarkable size, so that it seems like a smaller ear in front of each large one. In many species, especially of the 1st and 3d families, there is a still more remarkable membranous or leaf-like appendage on the nose, which in some is simple, in some, complex, and often of large size, giving an extraordinary appearance to the face. Some of the larger species, having a nasal crest, are called Spectre Bats (q. v.); two species of B. (*Rhinolophus*), possessing such an appendage, are called Horseshoe Bats, from the form of the crest. It is supposed that this nasal appendage is of use as a very delicate organ of touch, perhaps also of smell; as the great ears may be of use both for touch and hearing. These senses must often guide bats when that of sight cannot be employed; and the sense of touch appears to be possessed in high degree even by the wing membrane. By supposing it to be affected by the pulsations of the air, Cuvier accounted for the power displayed by bats which had been deprived of sight, of avoiding objects among which they flew, without the necessity of ascribing to them, as Spallanzani had done, the possession of a sixth sense.

Among the peculiarities which distinguish certain genera of bats, is the absence not only of the upper cutting teeth in the East Indian and African genus *Megaderma*, but even of the bone in which these teeth are usually placed; and another tropical genus *Nycteris*, of which the species are found in Africa and Java, have the skin attached to the body only at a few points, and capable of being blown up like a bladder, at the pleasure of the animal, by means of air which is inhaled through the nostrils into cheek-pouches communicating by small apertures with the general skin-bag. The use of this is wholly unknown.

Bats walk or creep awkwardly upon the ground, one side of the body being jerked forward, and then the other, yet they run with considerable celerity. There is a common

notion, that they cannot rise easily from a level surface, but must find some eminence from which to throw themselves. Of the fallacy of this, any one will soon be convinced who gets a B. and places it upon the floor.—Bats commonly produce one or two young at a birth.—Some of the species are very gregarious; others often fly about in pairs; great numbers, and of different species, are often found congregated in their places of hibernation or repose.—Some of the species are easily tamed, and become very familiar; but their odor is disagreeable, and it is generally difficult to keep them long alive.

Fossil remains of *Cheiroptera* are occasionally found in eocene rocks, but owing to the delicacy of the bones, great difficulty has been experienced in the determination of the genera and species.

BAT, or Bat, in Military Matters (see Batman): originally a kind of pack-saddle; hence a bathorse was a baggage horse bearing a bat or pack, and a batman was a servant in charge of the horse and bat. By a modification of meaning, a batman is now any soldier allowed to act as servant to an officer. When British troops are sent on foreign service, bathorses or mules are provided (if carriages are not forthcoming) for carrying the regimental books, the kettles and tents, the medicine-chest, the veterinary medicine-chest, intrenching tools, armorers' stores, saddlers' stores, etc.—about 20 such horses or mules to each battalion. Bathorses and batmen are also provided for carrying officers' camp equipage. An allowance for procuring these accommodations is usually called bat-money.

BATANGAS, *bâ-tân'gâs:* seaport town of the Philippines, Island of Luzon, cap. of the province of the same name. Lat. 13° 45′ n., long. 121° 5′ e. Distance from Manilla, 50 m. s. B. was founded 1581, is well built, and has an elegant appearance. It is finely situated on an extensive bay which opens into the Strait of Mindoro; has large commercial interests; and is the centre of a rich sugar-growing region. Pop. province, 311,180; town, over 35,000.

BATARDEAU, n. *băt'ăr-dō'* [F. *batardeau*, a dike or drain—dim. from OF. *bastard*, a dike]: a strong wall of masonry, built across the outer ditch of a fortress, to sustain the pressure of water when one part of the ditch is dry and the rest wet. It is built up to an angle at the top and is armed with spikes, to prevent the enemy from crossing; and sometimes a stone tower is provided to strengthen the defense. There is a sluice-gate to regulate the admission of water.

BATATAS, *ba-tā-tas*, or Sweet Potato (*Convolvulus Batatas*, or *Batatas edulis*, or *Ipomœa Batatas:* perennial plant with long creeping stems, heart-shaped leaves on long stalks, and variously lobed, large purple flowers much resembling those of the best known species of Convolvulus, and very large oblong acuminated tubers. The tubers are highly esteemed as food either roasted or boiled; they

are sweet, wholesome, and nutritious, but somewhat laxative. The native country of the B. is unknown. It is largely cultivated in tropical and subtropical regions, and to some extent in temperate climates. It was introduced into Europe from N. America immediately after discovery of the new continent, was the potato mentioned by Shakespeare, and was cultivated extensively in Spain and considerably in neighboring countries before the Irish potato (see POTATO) came into notice in those lands. For its perfect development it needs a moderately long growing season, and a warm and light, but fertile, soil. It is a common crop in most of the southern states, where it thrives better than the Irish potato, is extensively grown in N. J., and in small quantities is produced in most of the northern states, though it cannot be profitably grown for the market north of the latitude of Long Island. It is grown almost entirely from sprouts of tubers which have been placed in a Hotbed (q. v.) early in the season. Well rotted manure, or some commercial fertilizer, should be scattered in rows and covered with a small plow, thus forming ridges upon which the plants are set. The rows may be 3–4 ft. apart, the plants 18–24 inches apart in the rows. As the plants increase in size the ridges are to be made higher and broader by running a plow between them. Weeds must be kept out; and the vines should be moved occasionally to prevent their forming roots at the joints, as this would cause the starting of a great number of tubers too small for use and also prevent the growth of those in the hills. As soon as the vines are touched by frost they should be cut, near the stems, with a scythe, and the tubers harvested. For harvesting a 6-tined fork is often used. Digging should be done when the ground is dry and before cold weather comes. Great care must be taken not to cut or bruise the tubers. At the south the tubers are stored in pits in the field; but at the north, where it is difficult to keep them after the winter opens, they must be carefully dried and should be put in crates filled not more than 18 inches deep, and so arranged that there will be free circulation of air. They should be stored in a room in which a uniform temperature of about 58° can be maintained. They are sometimes packed in barrels with dry sand, cut hay, or chaff. As compared with Irish potatoes, there are but few varieties. Of these the Nansemond is probably the most extensively grown, though it does not keep as well as the Trinidad, Hayti Yam, and a few other sorts. The yield varies, with the variety, soil, cultivation, and season, from 100 to 500 bushels per acre. Among the most formidable enemies of the B. is the sawfly, whose larva feeds on the leaves. Hellebore, or pyrethrum power may be used, or Paris green can be applied as to Irish potato plants (see POTATO-BEETLE). There are several forms of rot and blight, some very destructive. Preventive measures are the rotation of crops and the use of sound seed. Spraying with copper fungicide (see FUNGICIDE) is the most efficient remedy yet discovered.

BATAVI, *băt'ă-vī* (or as in some MSS., VATAVI): a German people, who anciently inhabited a part of the present Holland, particularly the island called after them, Batavia, formed by the branch of the Rhine which falls into the sea at Leyden, the Waal, and the Meuse. Their country, however, extended across the Waal, but its boundaries cannot now be precisely determined. According to Tacitus, they were originally a branch of the Chatti, who emigrated across the Rhine. They were conquered by Germanicus; became subject to the Romans, and served them so well, that they obtained the honorary title of friends and brothers of the Roman people; were exempted from taxes and assessments, being required only to provide a proportion of troops; and were permitted to choose their commanders from among themselves. Their cavalry were particularly good, and were often employed by the Romans. The first who terms the insular district inhabited by these Gauls, Batavia, is Zosimus, who also informs us that in the time of Constantius (358) it had fallen into the hands of the Salii, a Frankish tribe.

BATAVIA, *ba-tā've-a:* properly the name of the island occupied by the ancient Batavi (q. v.), became at a later date the Latin name for Holland and the whole kingdom of the Netherlands. The name BATAVIAN REPUBLIC was given to the Netherlands on their new organization of 1795, May 16, and they continued to bear it till they were converted into the kingdom of Holland, under Louis Bonaparte, 1806, June 5.

BATA'VIA: cap. of the empire of the Netherlands in the East Indies; on the n.w. coast of Java, at the mouth of the Tjiliwong, frequently called the Jaccatra, from the former native town on the ruins of which the present city was built. There is good anchorage for large ships in the roadstead, and it is navigable for smaller vessels towards the interior. The influence of a vertical sun on this Holland in minature led it to become proverbial as the grave of Europeans. Latterly, however, the climate has been greatly improved by draining. The temperature, though not extreme, is oppressive from its uniformity, the mean of winter being 78.1° F., and that of summer only 78.6°. The latitude is 6° 7′ 40″ s., and the longitude 106° 52′ e. Notwithstanding the growing prosperity of Singapore, B. continues to be the commercial emporium of the far East. Its markets present at once all the productions of Asia, and all the manufactures of Europe. In 1811, while Holland was under France, B. was taken by the English, but was restored to its former owners in 1816. The Dutch government has laid a telegraphic cable of 600 m. from B. to Singapore. There is a railway from B. to Surabaya, and other points in the interior. Pop. (1900) 115,887.

The province of Batavia is low, but rises gently towards the s. The forests have all been cut down for the use of the sugar factories. It is well adapted for fruit trees and vegetables, which are cultivated by Chinese gardeners.

The peculiar character of the people has been lost by the influx of and intermarriage with strangers from all districts of the Indian archipelago. The language is a mixture of Sundanese, Malay, and other tongues, and is called low Malay. The largest estates are held by Europeans, the smaller by Chinese and natives. The religion is chiefly Mohammedan. There are good post-roads and some canals. The industries continue to increase, and chiefly consist of factories for making machinery for distilling and for sugar works; distilling arrack, copper and tin work, dyeing, etc. The nutmeg, cacao, and cocoa-nut tree are successfully grown. The live stock consists of buffaloes, horses, and cattle. Pop. of province of B., including Buitenzorg, nearly 1,000,000, of whom 8,000 are European, 65,000 Chinese, the remainder mostly natives.

BATAVIA, *ba-tā've-a:* cap. of Genesee co., N. Y., on Tonawanda Crk., 32 m. w.s.w. of Rochester, 36 m. n.e. of Buffalo. The New York Central and three other railroads centre here. It contains the court-house, public library, high schools, and factories for production of fire-arms, farming implements, threshing machines, shoes, sashes and blinds are important industries. The New York State Institute for the Blind, built 1869, is one of the finest public buildings in the state. Pop. (1910) 11,613.

BATBIE, *bâ-bē*, Anselme Polycarpe, French jurist and politician: b. Seissan, 1828, May 31; d. Paris, 1887, June 30. He first belonged to the faculties of law at Dijon and Toulouse, but, in 1862, he became professor of constitutional law at Paris. Elected to the National Assembly (February 1871), he became one of the leaders of the Monarchist party. In Broglie's reactionary cabinet (1873) he was made minister of public instruction. After 1876 he was a member of the Senate. He wrote *Turgot, Philosopher, Economist, and Administrator* (1860); *Course of Political Economy* (1864); *New Course of Political Economy* (1865); *The Public Credit* (1865); *Summary of the Course of Public and Administrative Law* (1885), and *Theoretical and Practical Treatise on Public and Administrative Law* (1885).

BATCHELDER, *bătch'ĕl-dĕr*, Richard Napoleon, American military officer: b. Lake Village, N. H., 1832, July 27. He entered the Union army at the beginning of the Civil War; and was brevetted brigadier-general, United States Volunteers, 1865, March 13, became brigadier-general and quartermaster-general United States Army, 1890, June 26, and was retired 1896, July 27. He was awarded a Congressional medal of honor for most distinguished gallantry in action during the Civil War. D. 1901.

BATCHELLER, *bătch'ĕl-ĕr*, George Sherman, American jurist: b. Batchellerville, N. Y., 1837, July 25. He was admitted to the bar in 1858; entered the Union army at the beginning of the Civil War; was taken prisoner at Harper's Ferry, and exchanged in 1863; was then appointed

deputy provost-marshal-general of the Department of the South; and, in 1865–70 was inspector-general on the staff of Governor Fenton of New York. In 1883 he became president of the International Tribunal of Egypt; in 1889, assistant secretary of the United States Treasury; in 1890 United States minister-resident and consul-general to Portugal; and in 1897, again a member of the International Tribunal of Egypt. In the last-named year he received from King Humbert the decoration of the great cordon of the Order of the Crown of Italy, in recognition of his services as president of the Universal Postal Congress which met in Washington in May 1897. In 1902, he was promoted by President Roosevelt to the Supreme Court of Appeal. Died Paris, 1908, July 2.

BATCHELOR, *bătch'ĕl-ŏr*, GEORGE, American Unitarian clergyman: b. Southbury, Conn., 1836. He was secretary of the American Unitarian Association 1893–7, and has since been editor of the *Christian Register*, published in Boston. He has also been secretary of the National Unitarian Conference 1870–80, and its chairman 1893–4. He is the author of *Social Equilibrium*.

BATCHIAN: see BATSHIAN.

BATE, v. *bāt* [F. *abattre*, to break down: Sp. *batir*, to lose courage, to lessen (see BAT 1 and ABATE)]: to lessen anything as by beating it down with a club; to retrench; to take away; in *OE*,. to grow less; to slacken, as speed. BA'TING, imp. BA'TED, pp. BATEMENT, *bāt'mĕnt*, among *artificers*, diminution. WITH BATED BREATH, in such a state of fear or expectancy that even the sounds of breathing are suppressed.

BATE, WILLIAM BRIMAGE, American legislator: b. near Castalian Springs, Tenn., 1826, Oct. 7; d. Washington, D. C., 1905, March 9. He served as a volunteer through the Mexican war; was graduated at the Lebanon Law School in 1852; elected attorney-general of the Nashville district in 1854; and was presidential elector in 1860. In the Civil War he rose from private to the rank of major-general in the Confederate army, and was three times dangerously wounded. He was an elector-at-large for Tennessee on the Democratic ticket in 1876; was elected governor in 1882 and 1884; and a United States senator in 1887, 1893, and 1899.

BATEMAN, KATE JOSEPHINE: 1842, Oct. 7; b. Baltimore, Md.; daughter of the English actor and manager, Hezekiah Linthicum. She made her first appearance about 1851 with her younger sister as "The Bateman Sisters." 1866, married George Crowe. Returned to the stage in 1868, playing Julia, Lady Macbeth, Medea, and other important rôles. She has been also successful in the management of theatres.

BATEMAN, *bāt'măn*, NEWTON, LL.D., educator: 1822, July 27—1897, Oct. 21. His family removed to Ill. 1833,

and he graduated at Illinois Coll., Jacksonville, 1843. He studied at Lane Theol. Seminary (Presb.); was a school principal in St. Louis, prof. of math. at St. Charles Coll., Mo., 1845–51; then principal of the free public school Jacksonville, Ill., also supt. of the school system of that city, and commissioner of the county; principal of the girl's acad., Jacksonville, and state supt. of instruction, 1858. During his 10 years of service as state supt., Dr. B. was active in establishing the Normal Univ., of the state. He was pres. of Knox Coll., Galesburg, Ill., 1877–92.

BATES, *bāts*, Alfred E., American military officer: b. Monroe, Mich., 1840 July 15. He graduated at the United States Military Academy in 1865; commissioned a second lieutenant in the 2nd Cavalry, promoted to first lieutenant, 1865, Oct. 19, transferred to pay department with the rank of lieutenant-colonel, 1897, Jan. 7; promoted colonel and assistant paymaster-general, 1899, March 31; and brigadier-general and paymaster-general, July 12, following. He became major-general 1904, Jan. 12, and was retired 1904, Jan. 14. He served for several years as military attache to the United States Embassy in London, and was a brigadier-general of volunteers in the war with Spain in 1898. Died New York city, 1909, Oct. 13.

BATES, Arlo, American author: b. East Machias, Me., 1850, Dec. 16. He graduated from Bowdoin in 1876, when he engaged in literary work in Boston, editing the *Sunday Courier*, 1880–93; and afterward became professor of English Literature in the Massachusetts Institute of Technology. He is author of poems and novels, including *The Pagans* (New York, 1884); *A Lad's Love; The Wheel of Fire* (1885); *The Philistines* (1888); *Berries of the Brier* (1886), poems; *Told in the Gate* (1892); *Talks on Writing English; Talks on the Study of Literature* (1897); *The Puritans* (1899); *Under the Beech Tree* (1899); *Diary of a Saint* (1902).

BATES, Barnabas, American clergyman; an active promoter of cheap postage in the United States: b. Edmonton, England, 1785; d. Boston, Mass., 1853, Oct. 11. He came to America at an early age, became a Baptist preacher in Rhode Island, and was, for a time, collector of the port of Bristol. In 1825, having become a Unitarian, he established a weekly journal in New York, called the *Christian Inquirer*. During Jackson's administration he received an appointment under Samuel Gouverneur, postmaster of New York, and for some time performed the duties of postmaster himself. The information gained in this capacity, first interested him in the question of cheap postage. He investigated the subject for years, wrote, published pamphlets, and lectured throughout the country, and finally effected a material reduction in the rates of land postage. He was endeavoring to obtain a correponding reform in ocean postage at the time of his death.

BATES, Blanche, American actress: b. Portland, Oregon, 1873. She made her first appearance in 1894 in

San Francisco, taking a part in Brander Matthews' one-act play *This Picture and That.* Her first success was as Mrs. Hillary in *The Senator,* and she has played the leading comedy roles in *The Last Word, The Railroad of Love, Transit of Leo,* and *The International Match.* Her acting of Nora in *A Doll House* (the first Ibsen play presented on the Pacific coast) was a distinct artistic triumph. She has also taken leading parts in *The Charity Ball, Sweet Lavender, The Dancing Girl,* and others. Her phenomenal success in *The Great Ruby* (1899); as Miladi in *The Three Musketeers* (1899); as Cigarette in *Under Two Flags;* in Long and Belasco's *Darling of the Gods* (1902–3), and in *The Girl of the Golden West* (1905–6,) has given her a place of assured prominence on the American stage. She is the wife of Lieut. M. F. Davis, U. S. A. See Browne and Austin, *Who's Who on the Stage* (1906).

BATES, Charlotte Fiske, American poet and miscellaneous prose-writer: b. New York 1838, Nov. 30. She was educated in Cambridge, Mass.; assisted Longfellow in compiling *Poems of Places;* edited the *Cambridge Book of Poetry and Song* (Boston, 1882); *The Longfellow Birthday Book;* and *Seven Voices of Sympathy;* has contributed to magazines; and has published *Risk and Other Poems* (1879). She was married in 1891 to Adolphe Rogé.

BATES, Clara (Doty), American author: b. Ann Arbor, Mich., 1838; d. 1895. She lived in Chicago and published many juvenile books; also *From Heart's Content* (1892).

BATES, David, American poet: b. 1810, d. Philadelphia, 1870, Jan. 25. He was the author of the well-known poem *Speak Gently.* In 1848 his poems were published under the title, *The Eolian.*

BATES, Edward, ll.d.: statesman: 1793, Sep. 4—1869, Mar. 25; b. Belmont, Va., of Quaker descent. He emigrated to Mo. 1814, and practiced law; also served in the legislature; was state atty. and served one term in congress. He declined the portfolio of sec. of war offered by Pres. Fillmore. Having taken strong ground as an anti-slavery man in his opposition to the Missouri compromise, he was made a candidate for the presidency, but the nomination went to Mr. Lincoln, by whom he was appointed atty-gen.

BATES, John Coalter: an Amer. military officer; b. 1842; served throughout the civil war in the regular army; promoted captain 1863, May 1, major, 1882, May 6, and colonel of the 2d U. S. Infantry, 1892, April 25. In the war with Spain, 1898, he was appointed brig.-gen. of volunteers; promoted to maj.-gen. for services at Santiago; honorably discharged under this commission 1899, April 13, and on the same day was recommissioned a brig.-gen. of volunteers. He was appointed military governor of the province of Santa Clara, Cuba, 1899, Feb.; ordered to the Philippines in April of the same year; assigned to the command of the Department of Southern Luzon 1900; promoted brig.-gen., U. S. A., 1901; promoted maj. gen.,

1902, July 15; became assistant chief of staff of the army under Lieut. Gen. Chaffee, and on retirement of the latter, 1906, Feb. 1, was promoted chief of staff with rank of lieut.-gen.

BATES, Joshua: financier: 1788–1864, Sep. 24; b. Weymouth, Mass.; son of Col. B. of the Revolutionary army, of an old Mass. family. From the age of 15, for more than 20 years, he was, except during 4 or 5 years, in the employ of William Gray and Son, Boston merchants, whose business connections were world-wide; and from the first he showed a fidelity and sagacity which ultimately caused the Grays to make him their financial agent in Europe, in close relation with great foreign firms. Having removed to London 1826, he entered the firm of Baring Bros. & Co. (1828), eventually becoming head of that great firm. As umpire in the contested claims between citizens of the two countries arising from the war of 1812, he gained high distinction. His sympathy with his native land continued till his death. He was prominent in founding 'free to all' the Boston public library, whose great hall, Bates Hall, perpetuates his memory. His first gift of $50,000 (1852) was followed by another of 30,000 vols. He died in London.

BATES, Katharine Lee, American story writer, poet, and educator: b. Falmouth, Mass., 1859, Aug. 12. She was called to the chair of English literature in Wellesley College in 1891; and has edited collections of ballads, etc.; and written juvenile stories, including *Rose and Thorn* (1889); also *The English Religious Drama* (1893); and *The College Beautiful* (1887); *History of American Literature* (1898); *Spanish Highways and Byways* (1900). She has edited *The Wedding-Day Book* (1881); Coleridge's *Ancient Mariner* (1889); *Ballad Book* (1890); Shakespeare's *Merchant of Venice* (1894), *Midsummer Night's Dream* (1895), and *As you Like It* (1896); Mabie's *Norse Stories* (1901); Keats' *The Eve of St. Agnes and Other Poems* (1902); (with Coman) *English History Told by English Poets* (1902); Lenox edition of Hawthorne's *Romances* (1902); Ruskin's *King of the Golden River* (1903); *Early Poems of Alice and Phoebe Cary* (1903); Tennyson's *Princess* (1904); etc.

BATES, Samuel Penniman, American historian: b. Mendon, Mass., 1827, Jan. 29; d. 1903. He was principal of Meadville Academy, Pa.; superintendent of schools in Crawford County, Pa., 1857–60; deputy state superintendent of schools, 1860–6; and State historian, 1866–73. Among his publications are the *Lives of the Governors of Pennsylvania* (1873); *Lectures on Mental and Moral Culture* (1859); *History of the Battle of Gettysburg* (1878); *History of the Battle of Chancellorsville* (1882).

BATES COLLEGE: at Lewiston, Me.; organized as a seminary by the Free Baptists 1854; changed to a college for both sexes 1863, and re-named in honor of Benjamin Bates, of Boston, who gave $100,000 toward its endowment. It is a college of liberal arts, comprising also a divinity

school. The college was founded by its first president, Rev. Oren Burbank Cheney, D.D. (1863–94), and bears the name of its chief benefactor, Benjamin Edward Bates, a merchant of Boston, and one of the founders of the city of Lewiston. Bates was the first eastern college to afford collegiate education to women, and her first woman graduate (1869) became a professor in Vassar College. Established in the interest of the Free Baptist denomination, she has been notably free from sectarianism—her faculty having been drawn from seven religious denominations and her students representing Protestants, Catholics, and Hebrews. Bates places primary stress upon character, does not tolerate hazing and makes abstinence from intoxicating drinks a condition of student membership. Her courses of instruction cover the range of undergraduate studies as pursued in progressive colleges of today. The unusual excellence of her courses in English, including argumentation, is indicated by her eleven victories in twelve intercollegiate debates held with five colleges and universities. To these results her three flourishing literary societies are believed to have contributed. Alone among New England colleges, Bates has no secret fraternities. She has chemical, physical, and biological laboratories, and a spacious athletic field. Her campus of 50 acres is of rare natural beauty, and with her nine buildings, has a value of $350,000. For many years the number of her graduates at the head of city high schools in New England is believed to have exceeded those of any other college. Faculty, 23; students, 450; endowment, $300,000; library, 31,875; endowed scholarships, 70, besides 10 owned by the state. The college has graduated over 1,500 students; about 500 have become educators. Cobb Divinity School is part of the college, having its own building, faculty and administration.

BATH, n. *băth*, in *plu.*, *bâthz* [AS. *bathian*, to bathe—from *Baeth:* Icel. *batha;* Ger. *baden*, to bathe: Icel. *baka*, to heat—*lit.*, a place of warmth]: a place to bathe in; that in which the body or part of it is bathed; in *chem.*, hot water, hot sand, etc., used as a source of heat, or for modifying it; a Heb. measure, the same as the *ephah*, equal to the tenth of a *homer*. BATHE, v. *bāth*, to warm by the application of hot water; to wash the body or part of it with water, etc.; to lie in a bath; to foment. BATHING, imp. *bā'thing*. BATHED, pp. *bāthd*. BATHER, n. one who. DRY-BATH, one made of hot sand, ashes, etc. AIR-BATH, exposure of the body to the refreshing influence of ordinary air; also the exposure of the body to the influence of *hot air*, as in a TURKISH BATH. PLUNGE-BATH, a bath in which the whole body is immersed. DOUCHE-BATH, *dôsh'*-, a bath in which a stream or jet of water is directed with considerable force upon some part of the body. SHOWER-BATH, a bath in which the water is poured upon the body in the form of a shower or spray. MEDICATED BATHS, *mĕd'ĭ-kā'-tĕd bâthz*, in which the water is impregnated with medicinal preparations.

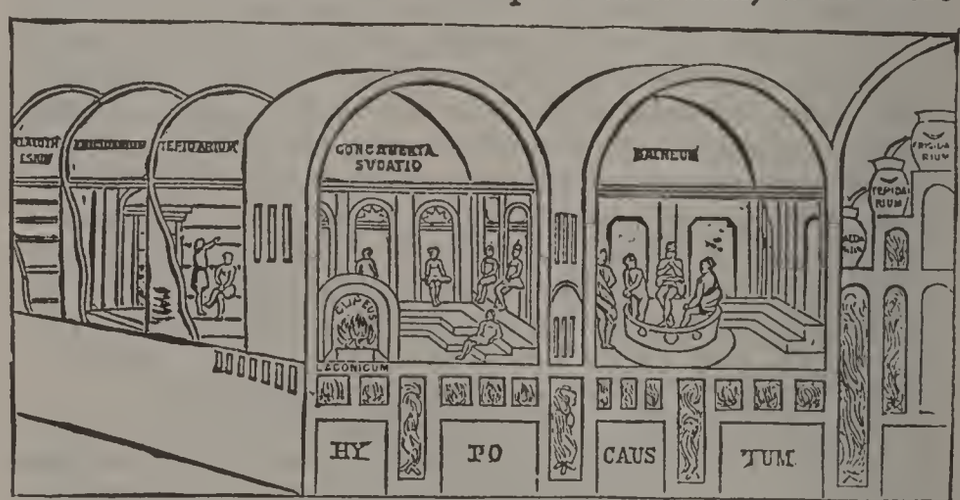
BATH—BATH'ING: usually the place—or the act—of immersion of the body or a part of it in water. In a more extended signification, it means the surrounding of the body with any medium differing in nature or temperature from its usual medium; thus, we speak of a blood-bath, a vapor-bath, a cold-air bath, a compressed-air bath (q.v.), an earth-bath. A fourfold division may be made of baths: 1. According to the substance with which the body is surrounded—into water, oil, milk, gas, sand, and other baths; 2. According to the manner of application—into river, slipper, plunge, shower, dropping, vapor, and douche baths; 3. According to the parts of the body subjected to the application—into whole, half, sitz, foot, hand, and eye baths; and 4. According to the temperature of the substance applied—into cold, tepid, warm, and hot baths.

Among the Egyptians, the bath was practiced as a religious rite; and, in general, the opinion prevailed throughout antiquity, that purification of the body induced or signified moral purity. Man, it was thought, ought to present himself pure in body and soul, when he engaged in the service of his god, or in any transaction that brought him into immediate contact with that being. In making the bath a frequent religious ordinance, Moses may have had in view the prevention or more speedy cure of those skin-diseases so prevalent in the East. The Mosaic Law prescribes expressly, in some cases, the use of running water, which has given rise, through a misunderstanding, to the deleterious cellar-baths of the Jews. In Palestine, the wealthier Jews had private baths in their houses, and ponds in their gardens, an arrangement usual in all civilized parts of the East, and still continued. There were, besides, public bath-houses among the Jews, as among other nations. Among the Greeks, also, bathing was very early in use. The practice is often alluded to in Homer. Bathing, among the Greeks, as among other nations, was counted a religious rite, and was connected with the preparations for sacrifice, for the reception of oracles, for marriage, etc. We possess, however, no detailed accounts of the construction and arrangements either of private or of public baths in Greece, which last were mostly connected with the gymnasia. The men bathed together; that there were public baths for women, appears probable from various indications.

Among the Romans, although warm baths (*thermæ*) were in use from the earliest times, yet it was only at a late period that they were so extensively adopted; and then the increase and universal spread of luxury had driven the primitive object of bathing into the background, so that the public baths were looked upon as places of general resort for pleasure. The most of these public baths were built under the emperors. They were numerous in Rome and in the provincial cities. Their construction may be gathered from their numerous remains, and from the descriptions of them given by Roman writers; they resembled the Turkish and Russian baths.

The essential parts of a Roman bath were as follows.—1. The *hypocaust* or stove, in the basement-story, for heating

both the bath-rooms and the water. The water was contained in three receptacles or boilers, so arranged that the undermost, immediately over the fire, contained the hot water; the one in the middle, the tepid water; and the uppermost the cold water. These vessels were so connected by pipes, both with the bath-rooms and with one another, that the hot water that flowed from the lowest boiler was replaced by tepid water from the one above; and that, again, by cold from the uppermost.—2. The *apodyterium*, or room for undressing.—3. The *frigidarium*, or room with a basin for cold bathing.—4. The *tepidarium*, the purpose of which cannot be exactly determined, but which seems to have been intended for bathing in tepid water, and also for allowing the body to cool down in a mild temperature.—5. The *caldarium*, in which is sometimes the *sudatio*, or sweating-bath, and sometimes the real hot-water bath, were taken. This room had hollow walls, and the floor rested on low pillars over the hypocaust, so that it was surrounded on all sides with heated air. The *laconium*, which is spoken of as a part of the caldarium, was probably a kind of stove that was heated from the hypocaust, and contributed to raise the temperature. In the bath-rooms there were basins (*alvei*) for holding the water, and round the walls were benches or seats, which, in the caldarium, were raised as in an amphitheatre, in order to give the bathers the choice of the higher temperature of the upper part of the room, or of the more moderate of the lower. The caldarium contained also a *labrum* or vase of several ft. diameter, filled with cold water, into which the bathers dipped after the hot bath. With these essential parts of a bath, there were



Roman Bath, from a Painting on the Walls of the Thermæ of Titus at Rome.

usually connected an *unctvarium* or *elæothesium*—i.e., an anointing-room, and often gardens, covered walks, rooms for games, etc.

The process of bathing was this: After undressing in the apodyterium, the bather was anointed in the elæothesium, with a cheap coarse oil, and then proceeded to a spacious apartment devoted to exercises of various kinds, among which games of ball held a prominent place (hence

the hall was called *sphæristerium*). After exercise, he went into the caldarium, either merely to sweat or to take the hot bath; and during this part of the process, the body was scraped with instruments called *strigiles*. Being now dried with cloths, and slightly anointed all over with perfumed oils, he resumed his dress, and then passed a short time successively in the tepidarium and the frigidarium, which softened the transition from the great heat of the caldarium into the open air.

The public baths for women were of similar construction, and were much frequented even by the most respectable. The women bathed in company like the men. The irregularity of men and women bathing together is also alluded to by ancient writers; and in later times, the baths in general became the scenes of all sorts of debauchery, as was the case at Baiæ.

The most remarkable remains of Roman baths are those of the baths of Titus, of Caracalla, and of Diocletian in Rome, and the recently excavated thermæ at Pompeii; remains of the kind are also to be found in Germany, France, and England. The extent and magnificence of those edifices it is difficult for us now to conceive.

The ancient Germans seem, according to Tacitus and other writers, to have been fondest of the cold-river bath. When Roman luxury was driven out by German habits, and the north of Europe got the upper-hand of the south, baths ceased to be of public importance, and amid the tempestuous irruptions and fluctuations of the different nations, those splendid edifices fell into ruins. Christianity, however, by the institution of baptism, had preserved for the bath its religious signification; and in the middle ages, among the ceremonies preceding the solemnity of conferring the honor of knighthood, the bath was held essential. The Arabians and the Mohammedans generally had more completely adopted bathing into their manners and customs. Islam enjoins on the believer the careful preservation of corporal purity; and for this purpose, prescribes repeated daily ablutions. Besides these, certain circumstances and times make the use of the B. virtually obligatory on both men and women. For this end, not only did the rich erect splendid baths in their houses and gardens, but bath-houses for the people in general were established in every town in which there was a mosque. The public baths of the Turks of the present day are a copy of those ancient Arabian baths. The operation of those oriental baths, imitations of which are now to be found in most American cities, is as follows: The building is of stone, the bath-rooms have a floor of marble, heated from below, and tubes in the walls conduct the heat in all directions. The bather undresses, wraps himself in a blanket, puts on wooden slippers, to protect him from the heat of the floor, and enters the bath-room. Here a general perspiration soon breaks through the skin, which is washed off with cold water. The body is then rubbed with woolen cloths, and smeared with a soap or salve beneficial to the skin. This is usually

accompanied by the operation of 'kneading.' The bath attendant stretches the bather on a table, pours warm water over him, and then begins to press, squeeze, and twist his whole body, with wonderful dexterity. Every limb is straightened and stretched, and when he has finished one side, he begins on the other. He kneels upon the bather, he seizes him by the shoulders, makes his backbone crack, and every vertebra quiver, or applies soft blows to the fleshy parts. He then takes a hair-cloth, and rubs the whole body, rubs off the hard skin of the feet with pumice-stone, anoints the bather with soap and perfumes, and finishes by cutting his hair and beard. This treatment lasts some three-quarters of an hour; and the feeling after it is as of being born anew. An inexpressibly delicious sensation of comfort pervades the body, and soon ends in a sweet sleep. After bathing, people repose in a cooler room, stretched on couches, and finally partake of coffee, sherbet, or lemonade.

In England, France, and Germany, public establishments for bathing were long unknown. It was during the Crusades, which brought the East and West into contact, that Europeans first became acquainted with the baths of the Asiatics; and the want of such institutions came to be more sensibly felt from the leprosy and other skin-diseases which intercourse with Asia introduced into western Europe. The evil was at first sought to be met by establishing hospitals; but as these were found insufficient, baths and bath-rooms were erected, which gradually became public establishments.

Besides the kinds of baths already described, there are now in nearly all the larger cities, generally in connection with water-baths, imitations of the vapor-baths which have been long in common use in Russia. The Russian Bath consists of a small apartment built of wood, with broad benches running round it, on which the people lie undressed. By throwing water upon glowing hot pebbles, a dense hot steam is produced, which envelops the bathers, and throws them into such a heat, that the perspiration breaks out over the whole body. In this atmosphere of steam, the thermometer ofter rises to 112°–140° F. After they have sweated for some time, and from time to time cooled themselves again, by having cold water poured over them, the skin is rubbed with soap, and with towels made of inner bark, or with brushes; they are flogged with softened birchtwigs, and then washed with tepid, and afterwards with cold water; and at last have cold water dashed over them. A bather will also go direct from the sweating-bath, and plunge into a river or a pond, or roll himself in the snow. These baths are a necessary of life in Russia, and are to be found in every village. The German vapor-bath differs in this, that the steam is produced in a boiler, and that the bather remains for some time in an adjoining room of moderate temperature, wrapped in blankets, to allow the perspiration to go on, and the blood to become calm. A ruder kind of sweating-bath, in a hole in the earth,

or in a baking-oven, is practiced among many nations; among the Finns, the natives of Mexico, and South America, etc.

As regards detergence, the vapor-bath is the only kind of bath that is really effectual. Seated naked in a room filled with hot vapor (which produces no inconvenience in breathing), the scurf, which, notwithstanding all sorts of previous ablutions, has accumulated on the skin, is gradually softened and loosened, and is rubbed off in a surprising manner by the hands of the bath-man who is in attendance at these establishments. As in the Turkish bath, the person is cooled down by being dashed with tepid and cold water. After this kind of bathing, the sensation is exceedingly agreeable. The process just mentioned may be said to resemble that in use by the Romans; the hands of the operator having much the same effect as the *strigiles* of the ancients. In the large American and European cities the well appointed bathing establishments are now equipped with these steam baths, and the great value of this species of bath as a purifier of the skin is becoming known.

Bathing is very important in the preservation and restoration of health. Besides promoting cleanliness, the refreshing and invigorating effects of cold bathing in its various forms have always been more or less understood, as have also the soothing effects of the warm bath. But the virtues of water as a curative agent have been more fully developed in modern times, since the rise of the system of therapeutics known as the water-cure or hydropathy. With that exaggeration which is incident to everything new, the first promoters of this system gave it out as a panacea 'for all the ills that flesh is heir to.' But now that these quakish pretensions are mostly given up, it is very generally admitted that water is capable of a large range of effects, some of them apparently of the most opposite kinds; while the mode of action is nothing mysterious, but capable of explanation on the recognized principles of physiology. See Hydropathy—See also Skin: Temperature of the Body.

A Medicated Bath is one in which some substance, intended to act as a medicine, has been mixed with the liquid. This is one of the most important methods known to medical art of bringing remedies to bear upon the system. The skin is by no means impervious to foreign substances; and no other organ presents at once so large a surface to the matter to be imbibed; at times, also, the other channels by which remedies are introduced into the body cannot be used. Baths of this kind are partly imitations of natural mineral waters, and partly other remedial mixtures. The mineral substances used are common salt, chloride of lime, nitric acid, corrosive sublimate, potash or soda caustic or carbonated, ashes, soap, iodine, sulphur, iron, etc.; the vegetable are wine, vinegar, solutions of essential-oils, infusions of thyme, rosemary, lavender, wormwood, willow, oak, and Peruvian bark, etc.; such animal substances as milk, blood, bouillon of meat, etc., are also sometimes employed as baths, with a view to impart nourishment, but

whether much is taken up into the system, is doubtful. In the case, also, of vapor-baths, medicaments are added to the water with good effect; these must, of course, be volatile. If the whole body is to be immersed in the vapor, nothing must be used that might injure the organs of respiration: when the application is partial, and by a special apparatus, this precaution is less necessary. In connection with this may be mentioned the so-called SMOKE-BATHS, or medicated fumigations, in which the whole body, excepting, of course, the head, or particular parts of the body, are brought in contact with the vapors of dry medicinal substances. Resinous aromatic substances, incense, myrrh, benzoin, amber, sulphur, cinnabar, and mercury are used for this purpose. The application must be made in what is called a fumigating-box, in which the particular part of the body alone is enclosed with the vapor, in order that the respiratory organs may not be incommoded. The utmost precaution is requisite with the vapors of sulphur and mercury, as they are apt to occasion serious injury.

Another species of vapor-bath is called an ANIMAL BATH, known to the ancients, and in great reputation in cases of lameness. Either the whole body of the patient was wrapped in the skin of a newly-slaughtered animal, or an opening was made, and the diseased limb inserted into the breast or belly of the animal while yet alive, or into the newly drawn blood. Sometimes smaller animals are killed, split up, and immediately applied to the diseased part.

Of GAS BATHS, the most generally used are those of sulphuretted hydrogen and carbonic acid gas, to be had at certain mineral springs. The first, mixed in small quantity with atmospheric air, lowers the irritability of the air-tubes, and affords relief in many diseases of the respiratory organs. A stronger mixture of it, brought in contact with the outer surface, is of use in disorders arising from depression of the functions of the skin. Carbonic acid gas gives a gentle stimulus to the skin, promotes menstruation, and is much used in many places in the form of half baths. In recent times, at Ischl and other places, the vapors that arise from the mineral springs loaded with saline particles, are received in close rooms, in which the patients walk about, and allow the vapors to act upon the lungs and skin.

The terms *water-bath* and *sand-bath* have been adopted in chemistry, to signify a contrivance by which vessels that are to be heated to a certain temperature are not brought into immediate contact with the fire, but receive their heat through the medium of hot sand or water, so that the heating takes place uniformly, and overheating is avoided.

Public Baths and Laundries are establishments at which the multitudes that are without private bathing (or laundry) facilities can have the use of them for a very small sum. In factories or other works, there is usually waste steam or waste hot water at disposal, which could, at an insignificant cost, be directed into baths for the workmen. But this is only a small part of the cure for a great evil

where people are densely packed in lanes and alleys, and where the necessaries of life have to be continually struggled for. Moreover, a public bath-house and laundry provides by co-operation superior accommodation and better apparatus, with more economy than can be secured by isolated efforts.

In England, Mrs. Catherine Wilkinson, of Liverpool, in a year of cholera, bravely offered the use of her small house, and the value of her personal superintendence, to her poorer neighbors, to facilitate the washing of their clothes at a time when cleanliness was more than usually important. This led to the formation of a benevolent society about 1844, and ultimately to important municipal arrangements in various countries. In nearly all the principal towns of Great Britain such institutions are maintained at the expense of the local govt. Similar provision has been made in France and some other European countries.

In general it has been found desirable to provide two, three or four classes of baths, and at least two classes of laundries: the second-class bathers are in some establishments thrice as numerous as the first. In the laundries the charge varies from 2 to 5 cents an hour, according to the class and the accommodation.—An establishment at Manchester—a type of those in Great Britain—has a swimming-bath, 70 ft. by 25, with a pavement of polished York stone on a foundation of concrete and cement; the sides are of porcelain tiles laid in cement. There are 32 enclosed dressing closets. Over these, on iron pillars, are 17 men's warm baths, each 8 ft. by 7. Separated from this gallery by an open passage are 5 extra first-class baths larger in size, and having shower-baths. There is a second-class swimming-bath nearly like that for the first-class; with its gallery of small baths over. The women's baths, in a different part of the building, comprise 4 first and 7 second-class. The laundry is at one end of the building, having its washing-room 64 ft. by 38, comprising 6 first-class and 30 second-class compartments, each of the former provided with three tubs, and each of the latter with two. There is provision for drying any amount of clothes in twenty minutes after the washing and wringing are completed. All the women have access to two patent wringing-machines. There is an ironing-room adjoining, fitted up with stoves. The baths, all full, hold 50,000 gallons.

The baths of the several parishes nearly or quite pay their own expenses.

In the United States, though public baths have existed for some 40 years in a few great water-side cities, they were till a few years ago confined to cold swimming-baths sunk in the sea or river near the shore, and open only during warm weather; the first general movement in favor of year-round hot and cold baths was a reflex from Germany, about 1891. In that year the People's Baths were built in New York by a private philanthropic association, and maintained by a small fee; and in 1893 Chicago opened a

small municipal bath house. The first compulsory legislation was by New York state in April 1895; it obliged all cities of over 50,000 people to establish public baths and comfort stations, kept open the year round, with both hot and cold water, and 14 hours a day, and under such conditions as the local board of health judged proper; river, lake or sea baths not to be deemed a compliance with the act. Cities under 50,000, though not compelled, were permitted to use their funds or credit for the same object. The first city to comply, and perhaps the first in the United States to furnish such conveniences in their full extent, was Yonkers, N. Y., not within the compulsory section. Within the act, Buffalo opened its first in 1897; Albany, Rochester, Syracuse, and Troy, have since complied; and in New York the first one, five years after the act was passed, was opened in Rivington Street in a closely packed quarter, during 1900, at a cost of $100,000. In Philadelphia the Public Baths Association was organized in 1895; but the first to be opened was in 1898, in a crowded quarter between Fourth and Fifth streets; there is also a public laundry in connection with this establishment. Pittsburg, Pa., has a permanent public bath. Some of the old warm-season baths have been made permanent, as in Newark, N. J., which so extended two in 1898, and in 1900 voted a third. Boston from 1897 to 1899 increased its public baths to 33; and prepared to erect permanent structures in each industrial section of the city. The first of these was opened at Dover Street in 1898. St. Paul, Minn., has a large permanent bath connected with a public playground.

BATH, *bâth:* a city, port of entry, and cap. of Sagadahoc co., Me.; situated on the w. bank of the Kennebec river, 12 m. from the ocean, 4 m. below its confluence with the Androscoggin at Merrymeeting Bay. The river is here about a mile wide with good anchorage and docks. The tide rises above 12 ft. It has long been noted for its excellent public schools. Bath has high rank as a shipbuilding port. The gunboats *Machias* and *Castine,* the ram *Katahdin,* and several torpedo boats were built here for the new U. S. navy. As the river is very deep and seldom freezes here, B. has great commercial advantages. A large number of vessels sailing to all parts of the world, are owned in Bath. There are also manufactories of brass and iron goods, oil cloth, shoes, and lumber. The city contains several national banks, public library, a costly system of waterworks. Pop. (1910) 9,396.

BATH, cap. of Steuben co., N. Y., on the Conhocton Creek, 20 m. n.w. of Corning, by the railroad. Another railroad 9 m. in length connects it with Keuka Lake. B. has several churches and banks, Haverly Union School, New York State Soldiers' Home, and Orphan Asylum, and different factories. Pop (1910) 3,884.

BATH, chief city in Somersetshire, Eng., beautifully situated in a wooded valley in the n.e. part of the co., on the Avon, 20 m. from its mouth, and 106 m. w. of London.

The houses are built wholly of white freestone—'Bath oolite,' worked in the neighboring quarries—bricks being entirely discarded. The city has a finer appearance than any other in England, the variety of level giving very commanding sites for its fine and regular streets, crescents, and public buildings. The beauty and sheltered character of its situation, the mildness of its climate, and especially the curative efficacy of its hot chalybeate springs, have long rendered B. a favorite fashionable resort. The springs, four in number, were known to the Romans, who built baths on the spot in the 1st c., of which extensive remains were discovered 1775. The temperature of the springs varies from 97° to 117° F.; they rise near the river bank, in the centre of the city. The water is most useful in bilious, nervous, and scrofulous complaints, palsy, rheumatism, gout, and cutaneous diseases. Though the gayety of B. has greatly waned since the days of Beau Nash, there has been a great general improvement in the city, but the population somewhat diminished during the last sixty years. It has two parks, and many public walks and open places; theatre, concert-rooms, and other places of amusement; subscription library, museum, club-house, educational institutions, etc. The Abbey Church is a cruciform structure in the latest perpendicular style, with a fine roof in the style of Henry VII.'s chapel, and a central tower 150 ft. high. About a mile to the n.w. is Beckford's Tower, 154 ft. high, built by the eccentric author of *Vathek*, now a cemetery chapel. B. returns two members to parliament. B. has no manufactures of note. Coal is found in the neighborhood. The Great Western railway from London to the west passes through the city. B. is of great antiquity; it was a Roman station called *Aquæ Solis*, at the intersection of the great Roman ways from London to Wales, and from Lincoln to the s. coast of England. Richard I. granted B. its earliest extant charter, subsequently confirmed by Henry III. and greatly extended by George III. A greater number of Roman remains have been found in and near B. than elsewhere in Britain; in 1881, a complete Roman bath was uncovered. Pop. (1901) 49,817, at times largely increased by visitors.

BATH, Knights of the: a most honorable order of British knighthood instituted 1399, revived 1725, and extended 1815 and 1847—so named from the accompanying ceremony of *bathing* which used to be practiced at the inauguration of a knight, as an emblem of the purity thenceforth required of him by the laws of chivalry. The ceremony is of unknown antiquity, and is spoken of by writers of the 13th c. as an ancient custom. See Knight. The earliest authentic instance of its observance in Britain, is in the time of Henry IV., who, in preparing for his coronation, made 46 knights at the Tower of London, who had watched all the night before, and bathed themselves. The last knights of the B. created in the ancient form were at the coronation of Charles II., 1661. From that period till the accession of the House of Hanover, the order fell into

oblivion. It was revived by George I. 1725, and is now the second order in rank in England, the first being the Garter. By the statutes then framed for the government of the order, it was declared that, besides the sovereign, a prince of the blood, and a great master, there should be thirty-five knights. At the end of the Napoleonic war, it was thought expedient, with a view to rewarding the merits of many distinguished officers, both military and naval, to extend the limits of the order, which was effected 1815, Jan. 2. But the order was still purely military, and it was not till 1847 that it was placed on its present footing by the admission of civil knights, commanders, and companions. The following is its present organization:

First Class.—Knights Grand Cross (K. G. C.); the number not to exceed, for the military service 55, exclusive of the royal family and foreigners; for the civil service 27.

Second Class.—Knights Commanders (K. C. B.); military 145, civil 110, exclusive of foreigners. These, like the first, have the title *Sir*, and take precedence of Knights Bachelors.

Third Class.—Companions (C. B.); military 705, civil 302. They take precedence of Esquires, but are not entitled to the distinctive appellation of knighthood. No officer can be nominated to the military division of this class unless his name has been mentioned in the *London Gazette* for distinguished services in action; and the order has never been conferred on an officer below the rank of a major, or commander in the navy.

BATH'GATE: town in Linlithgowshire, Scotland, 20 m. w.s.w. of Edinburgh. The old town is on a steep slope, the new on a more level site. In 1663, King Charles II. granted B. a charter. The remarkable gas coal called Torbanehill Mineral, the subject of much litigation, and of discussion and difference of opinion among scientific men, is worked here. B. has paraffin and paper works, but mining is the chief occupation of the inhabitants. Pop. (1901) 6,786.

BATHOMETER, *ba-thŏm'e-tĕr* [Gr. *bathos*, depth; *metron*, measure]: an instrument used to determine the depth of the sea under a vessel. The density of sea-water is about 1.026, but that of the solid earth is on an average about 2¾ times as great. Therefore, any given depth of the water beneath a ship attracts it less than the same thickness of rock or earth would; and the greater the depth of the water the less the attraction. Consequently, too, the weight of a ship and its cargo is greater near the shore in shallow water than out on the deep sea. Any instrument constructed with sufficient delicacy to indicate the variation of weights upon different depths of water can be made to show also the depth of the sea. C. William Siemens was the inventor of the required instrument. It consists of a vertical column of mercury in a steel tube of small bore with a cup-shaped expansion below closed with a steel-plate diaphragm. The motion caused by the varying pres-

sure of the mercury upon this diaphragm is so magnified by a micrometer screw, having an electric tell-tale, that the depth of the water is indicated to the fathom.

BATHORI, *bâ'to-rē*, ELIZABETH: niece of Stephen Bathori, King of Poland, and wife of Count Nadasdy, a Hungarian nobleman; born in the latter half of the 16th c.; d. 1614. Her diabolical cruelty has condemned her memory to eternal infamy. By large bribes she induced an old man-servant and two female servants to kidnap and convey to her, either by stratagem or force, young girls from the neighboring country, whom she slowly put to death in the dungeons of her castle by the most horrible tortures. It is related that on a certain occasion, having violently struck one of her victims, the blood spurted up into her face, and as she fancied, left the skin whiter when it was wiped off. An infernal idea instantly possessed her. She invited to a grand banquet all the young girls round about, and caused 300 of them to be put to death, being under the impression that a bath of blood would renew her youth. So monstrous a story is probably exaggerated, but it at least shows that she was conceived capable of it. Inquiry was at length made into the appalling rumors, when it was discovered that this female fiend had murdered, in cold blood, not fewer than 650 maidens. The domestics who assisted her were either beheaded or burned alive; but the countess, whose crimes merited infinitely the greater punishment, was merely imprisoned for life in her fortress of Csej, where she died.

BATH-METAL: a mixed metal, called prince's metal. BATH-STONE, *bâth'-stōn*, oolitic freestone extensively quarried for building purposes near *Bath*, very soft, and becoming hard on exposure to the atmosphere. BATH-BRICK, *-brĭk*, a well-known kind of stone used for cleaning and polishing metal utensils. BATH-CHAIR, a chair on wheels covered with a hood for invalids, first used at *Bath*.

BATHOS, n. *bā'thŏs* [Gr. *bathus*, deep; *bathos*, depth]: a ludicrous descent from the elevated to the mean in speaking or writing; the *profound*, ironically, in contradistinction to the *sublime*. See CLIMAX. It is of the essence of B. that he who is guilty of it should be unconscious of his fall, and while grovelling on the earth, should imagine that he is still cleaving the heavens. A good example of B. is the well-known couplet:

And thou, Dalhousie, the great god of war,
Lieutenant-general to the Earl of Mar!

BATH'STONE: a building stone, from quarries in the Lower Oolite, in Wiltshire and Somersetshire, Eng. It is fine grained, of a rich cream color, and is composed of about 94½ per cent. of carbonate of lime, and 2½ per cent. of carbonate of magnesium, but is free from silica. It is easily wrought in the quarry, some beds cutting almost as readily as chalk, and hardens on exposure to the air, but is not very durable. Within twenty-five years after the reparation of Henry VII.'s chapel, in Westminster Abbey,

with this stone, it had begun to decompose. The name is derived from the neighborhood of several of the quarries to Bath.

BATHURST: island, off north Australia, about lat. 12° s., and long. 130° e. It is close to the much larger Melville Island, and is partly wooded, partly barren.

BATHURST: island in the Arctic Ocean, intersected by the 100th meridian, and situated immediately beyond the 75th parallel.

BATH'URST: city in New South Wales, on the Western railway, 145 miles w. of Sydney, on the s.w. of Macquarie river. It is the sixth city in the state, and the seat of circuit courts and of Anglican and Rom. Cath. bps. It is lighted with gas, has a good water supply, contains many educational, establishments and other public buildings, and has several newspapers. The first discovery of gold in Australia was made near B. 1851, by Edmund H. Hargraves (q. v.), a digger from California. B. was founded 1842, at which time the depredations of the aborigines were so serious that martial law was proclaimed. Two years later, there was an insurrection among the convicts, resulting in the death of two soldiers and the subsequent execution of ten of the desperadoes. B. is 2,153 feet above the sea level, and surrounded by hills. Climate excellent. Pop. (1901) 9,223.

BATHURST: town, the principal settlement of the British colony on the Gambia (q. v.): situated on a small island at the mouth of the river. Pop. about 8,000.

BATHURST, *bâth'urst*, EARL (HENRY BATHURST): 1762, May 22—1834, July 26: eminent tory statesman, son of the second earl (lord chancellor 1771–78). In 1804, he was appointed master worker of the mint; in 1807, pres. of the board of trade; and was sec. of state for foreign affairs from 1809, Oct. 11 to Dec. 6. Appointed, 1812, June 11, sec. for the colonies, in the administration of the Earl of Liverpool, he held that office 16 years. In 1828, in the Wellington administration, he became pres. of the council, which office he retained till the resignation of the ministry 1830. At the time of his death, he was a teller of the exchequer, clerk of the crown, and elder brother of the Trinity House, K.G., D.C.L., F.R.S., F.S.A., etc. He was much esteemed by his party. His son, Henry George, who succeeded as fourth earl, died 1866, and was succeeded by his brother, William Lennox, fifth earl.

BATHURST INLET: an arm of the Arctic Ocean, projecting due s. for about 75 m. into the North American continent, at 110° w. long. 300 m. from Great Slave Lake.

BATHVILLITE, *bâth'vĭl-līt* [from *Bathville*, Scot., where it occurs]: an amorphous fawn-colored, lustreless mineral, resembling rotten wood; placed by Dana in his Succinite group of Oxygenated Hydrocarbons. Its specific gravity is about 1.01. Composition: Carbon, 58.89–78.87; hydrogen, 8.56–11.46; oxygen, 7.23–9.68; ash, 0–25.32. It is akin to Torbanite.

BATHYÁNI: see BATTHYÀNYI.

BATHYBIUS, *ba-thĭb'-ĭ-ŭs:* name given by Prof. Huxley to a glairy substance brought up in deep-sea dredgings from the bottom of the Atlantic Ocean at a depth of 650 fathoms, which he then regarded as organic and as one form of the Monera. With this view Prof. Hæckel accorded, accepting B. as a probable instance of spontaneous generation. In this somewhat tenacious slime, separating under the microscope into irregular strings, were found granular masses which were called coccoliths. The organic character of B. was from the first denied by many who maintained that the B. was a complex mass of slime, containing living organisms and the remains of dead ones; and ultimately Prof. Huxley ceased to regard it as an organic form.

BATHYMETRY, n. *bă-thĭm'ĕt-rĭ;* [Gr. *bathus,* deep; *metron,* a measure]: measurement by sounding of the depth of the sea at various places. BATHYMETRICAL, a. *băth'ĭ-mĕt'rĭ-kăl,* applied to the distribution of plants and animals along the sea-bottom which they inhabit.

BATIDES, n. plu. *băt'ĭ-dēz* [Gr. *bătis,* a thornback; *bătŏs,* a thorn]: a family of the *Elasmobranchii,* comprising the rays.

BATIGNOLLES, *bâ-tēn-yōl':* a thriving northern suburb of Pairs.

BATIST, or BATISTE, n. *băt'ĭst* [Gr. *baptistēs,* a baptiser; named, according to Mahn and others, either from *Baptiste Chambray,* who claimed to have been its first manufacturer; or because it was used to wipe the heads of infants after their baptism]: a fine linen cloth manufactured in Flanders and Picardy: also a kind of cambric.

BATJAN: see BATSHIAN.

BATLET, n. *băt'lĕt* [see BAT 1: Scot. *beetle,* a heavy mallet]: a flat piece of wood for beating linen in the washing.

BATLEY, *băt'lĭ:* manufacturing town in the West Riding of Yorkshire, eight m. from Leeds. It is a municipal borough, associated for parliamentary purposes with Dewsbury, one m. distant. B. is the chief seat of the heavy woolen manufactures—army cloths, flushings, pilots, druggets, etc. The town hall is of modern date; the parish church is in the early English style, and there are about 30 other churches, a free grammar school, a chamber of commerce, and a mechanics' institute. The borough was incorporated 1868. Pop. (1901) 30,030.

BAT MALTHÆA (*Malthœa vespertilio*): a fish noted for its extreme hideousness; with some resemblance to a bat and to a scorpion. It is found in the Atlantic.

BATMAN, n. *baw'măn* or *bōr'măn* [F. *bât,* a pack saddle —from mid. L. *bastum,* a seat or saddle on which baggage may be fastened:] a person appointed to every company of a regiment to take charge of the cooking utensils, etc., usually an officer's servant. BAT-HORSE, *baw'hŏrs* or *bŏr'-hŏrs,* the pack or baggage horse allowed to a batman. See

BAT or BÂT. *Note—Pack animal* in an army is one that carries public property only.

BATON, n. *bâ'tŏng* or *băt'ŏn*, more rarely BATOON, n. *bă'tôn'* [F. *bâton;* OF. *baston*, a stick]: in *her.*, a mark of illegitimate descent (variously written Battoon, Batune, and in OF. Baston); the figure commonly called the Bastard Bar (q. v.); a staff; a club; a field-marshal's staff of office, presented by the sovereign as a symbol of the authority newly bestowed; a short staff as a badge of office; a long staff carried by the drum-major of an infantry regiment; in *arch.*, a molding round the base of a column. CONDUCTOR'S BATON, a short slender staff or stick with which a conductor, slightly elevated in front, indicates to a band of performers by movements in the air, the time and quality of the various passages of the musical composition.

BATON ROUGE, *bat'on-rôzh:* La., city, parish-seat of East Baton Rouge, and capital of the State. The city is situated on the eastern bank of the Mississippi River, 90 miles northwest of New Orleans, and is on the Texas and Pacific and the Yazoo and Mississippi Valley Railroad. It was the capital of the State from 1847 to 1864, when the seat of government was removed to New Orleans. On 1882, March 1, Baton Rouge was again selected as the capital city. The State capitol building here was completed in 1852 at a cost of $246,000. It was partially burned during the Civil War but was rebuilt in 1882. The Louisiana State University was organized here in 1860. The city also contains various state institutions, orphan asylum, penitentiary, deaf and dumb, and blind asylums, state agricultural and mechanical college, and agricultural experiment station. There are among other public buildings, the court house, city hall, post office, collegiate institute, high school building, and a national soldiers' cemetery. There are varied and extensive manufacturing interests, including cotton seed products, lumber, sugar, molasses, brick, artificial ice, and agricultural implements. The city has national and state banks, several daily and weekly newspapers. Baton Rouge is governed under a charter of 1898, by a mayor and a city council, elected every four years. A convention which met here 1861, Jan. 21, adopted the ordinance of secession on the 26th; the city was taken by the Federal army 1862, May 7. On August 5 the same year a Confederate force numbering 5,000 attacked the Federal garrison, but was repulsed after a fierce contest lasting two hours. The city was shortly afterward evacuated but a month later was re-occupied by the Federal troops who remained until the close of the war. Pop. (1900) 11,269; (1910) 14,897.

BATOUM: see BATUM.

BAT-PRINTING, n.: a process of decorating glazed porcelain, in which a gelatine pad is used to transfer an impression from an engraved plate to the ware. The transfer is in oil, which is dusted with a metallic color, and fixed by firing.

BATRACHIA, n. *bă-trā-kĭ-ă* [Gr. *batrăchos*, a frog]: the amphibians as a class; sometimes restricted to the ord. of the *Anoura*. BATRA'CHIAN, a. of or relating to the frog tribe N. one of the frog tribe. BATRACHOID, a. *băt'rā-koyd* [Gr. *eidos*, resemblance]. formed like a frog. BATRACHOLITES, n. plu. *bă-trăk'ō-lītz* [Gr. *lithos*, a stone]: fossil remains of animals of the frog kind.

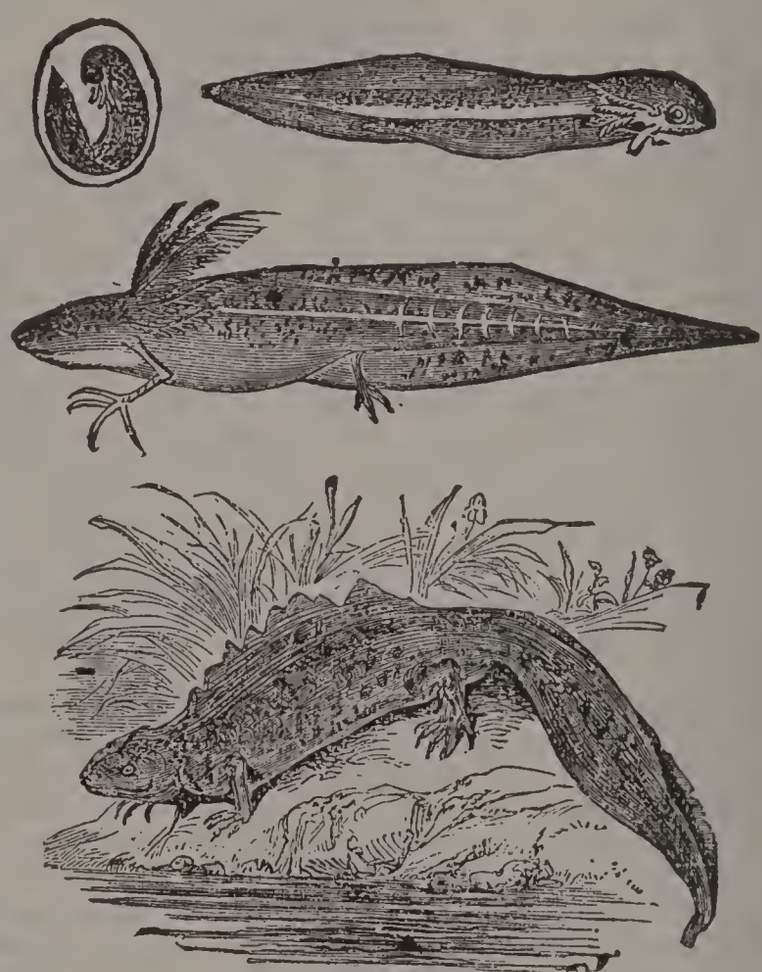
BATRACHIA, *ba-trā'kĭ-a*, in Zoology: nearly synonymous with *Amphibia*, the name of what is now generally regarded as a distinct class of the sub-kingdom *Vertebrata*, intermediate in many respects between Fishes and Reptiles (q.v.). The B. used often to be treated as one of four orders into which the Reptiles were divided. The most important difference between the B. and the Reptiles is that the young B. undergo metamorphoses, and breathe by gills alone, in the earlier part of their life; while in their adult state they breathe either by lungs alone, or by both lungs and gills. Also the body is covered with a soft naked skin, through which water is imbibed, and through which the aëration of the blood seems partly carried on. The B. all are oviparous; their eggs are covered not with a hard shell, but merely with a soft membrane. Fecundation commonly takes place after the eggs have been deposited. It is sometimes given as a distinctive character of B., that, in their adult state, they have limbs, but in some genera these are very rudimentary, and they are altogether wanting in *Cæcilia* (q.v.), a genus which is now decidedly referred to this order, because it has been found to undergo the metamorphosis from a gill-breathing to a lung-breathing state, and which Cuvier, with hesitation, placed among serpents, because the fact of its metamorphosis had not then been ascertained. The ordinary number of limbs is four, but in the *Siren* (q.v.) there are only two.—Another character frequently given as distinctive of the B., that their feet are destitute of claws, is in like manner only general, not universal.

In the earlier period of life, the form of the B. is fish-like, of which the common tadpole, the young of the frog, is a familiar example; and this form some of them retain with comparatively little modification, while some of them ultimately acquire a form resembling that of lizards, with which the newts were indeed ranked by Linnæus as species of the same genus; and others, as frogs, and toads, assume a peculiar quadruped form, the tail entirely disappearing, except in the elongated coccygeal bone which represents it to the anatomist.

In their anatomy, the adult B. presents some important points of resemblance to fishes; in some important points, they differ both from fishes and from other reptiles. The skull resembles that of fishes in its general form, although agreeing rather with other reptiles in the parts of which it is composed. Teeth are often entirely wanting, sometimes they are present only in one jaw; when present, they are generally small and numerous, either in a single row or aggregated. In some of the fossil genera, however, referred

to this order, the teeth are large.—The B. have either no ribs or mere rudimentary ribs. They have, however, a breast-bone, often in great part cartilaginous, to which some of the most important muscles are attached. They breathe air by a sort of gulping.—The heart of the B. was long believed to have only one auricle and one ventricle, but the apparently single auricle, is now known to consist of two divisions. As in the class Reptiles, only a part of the blood received from the circulating system is sent to the organs of respiration, while another part returns immediately into the circulation. See REPTILES.

In the wonderful transformations which the B. undergo, the circulation of the blood is changed in accordance with the change in the organs of respiration. These, in the earliest stage, are external gills, which appear as long colored



Newt, in successive stages.

fringes, hanging loosely upon each side of the neck. In some B., these external gills, which resemble those of the aquatic mollusca, remain till the lungs are sufficiently developed for respiration; in some, as the Axolotl (q.v.), they are permanent during the whole of life. In the greater part of the B., however, the external gills soon disappear, and are replaced by internal gills, when the tadpole exhibits its most perfectly fish-like form, its mode of progression also corresponding with that of fishes. Its respiration is carried

on essentially as in fishes, water entering the cavity of the mouth, and being forced out through the gill openings, so as to come in contact with the minute filaments of the gills. The gills are attached, as in fishes, to arches connected with the hyoid bone. In this stage of existence, the large arterial trunk which proceeds from the ventricle of the heart, sends forth, from a bulbous enlargement which it forms, as in fishes, an artery to each of the gills, and the blood after being aërated in them, is collected into an aorta, and proceeds into the general circulation. But an artery is also provided on each side for the conveyance of blood to the lungs, both the lungs and their arteries being at first rudimentary, but increasing, while the gills, on the contrary, diminish as do the blood-vessels connected with them; and the gill-breathing is gradually transformed into a lung breathing animal, no longer perfectly aquatic, as at first, or capable of existence only in water, but amphibious, or almost entirely terrestrial, and incapable of remaining long under water without coming to the surface to breathe.—While these changes take place, others no less extraordinary are going on. The tadpole which subsisted on vegetable food, and had a mouth adapted to feeding on it—a small horny beak—acquires a mouth fitted for seizing and swallowing small insects, slugs, etc., upon which the adult B. chiefly or exclusively feed, and its habits change accordingly. The mouth of the *Siren*, however, always retains a character somewhat similar to that of the tadpole.—In the course of transformation, a pelvis is formed, and limbs sprout forth, which in some B., as frogs, become very perfect and powerful. While the limbs grow, with all their bones, joints, muscles, blood-vessels, and nerves, the vertebræ, in many B., diminish in number, and the tail gradually shortens and disappears.

The extremely different characters of the adult B. suggest the idea of an arresting of the metamorphosis at different stages; but while this idea may be helpful to an understanding of the close affinities which really pervade the whole order, it must be remembered that it does not equally apply to all parts of the animal system; and that even as to those which have been particularly mentioned above, some B. in their perfect state appear to have one part in what, for convenience, may be termed a more advanced state than another; while all are adapted with equal perfection to the situations in which they are appointed to live, with reference both to their own wants and the preservation of their species.

If the limbs of the tadpole or the frog are injured or destroyed during their growth, the loss is wonderfully repaired. This power of reproducing lost limbs continues in an extraordinary degree in the adult newt (q.v.).

B. are generally inhabitants of warm or temperate climates. Those which inhabit temperate climates generally become torpid during winter. They are either almost entirely aquatic or found in moist situations. The British species are very few. In some of the Scottish isles they are unknown.

The best classification of the recent Batrachia divides them into *Trachystomata* (sirens); *Proteida* (bushy gills); *Urodela* (salamanders); *Gymnophiona* ('blind snakes,' etc.); *Anura* (frogs, toads).

Fossil remains and footprints in rock attest the existence, in former geological periods, of B. of large size. 'It is only in tertiary and post-teritary strata that extinct species referrible to still existing genera or families of this order have been found.' These occur both of the tailed and tailless forms. One of them has been a subject of particular interest, because its remains, when discovered by Scheuchzer, in the beginning of the 18th c., were mistaken for the remains of a human being, and the discoverer enthusiastically urged them upon the attention of his contemporaries as a proof of the deluge. To this salamandroid fossil the name *Andrias* (from the Gr. for man) *Scheuchzeri* has been given. —Batrachians appeared first in the Carboniferous, and were of the extinct order *Stegocephala,* meaning covered heads, in reference to some with bony plates. They are named also Labyrinthodonts (q. v.) from the complex structure of the teeth. One species was found in a sand-filled stump of the Nova Scotia coal measures. There are many genera, of which 17 were recently described from the Ohio survey, some of them snake-like. Many footprints, in the eastern and western coal-fields, have been found. Near Westmoreland, Penn., was a series, the hind-feet 5½ in. long, and the distance between tracks 6–8 in. *Archegosaurus* (q. v.), of Bavaria, measured 3½ ft.

BATRACHITE, *băt'ra-kīt* [Gr. *batrachitēs,* a mineral of a frog-green color—from *batrachos,* a frog]: a mineral, according to British Museum Catalogue a variety of Olivine, but Dana makes it a variety of Monticellite.

BATRACHOMYOMACHIA, *băt'râ-kō'mĭ-ō-mā'kĭ-â* (the War of the Frogs and the Mice): a Greek mock-heroic poem, erroneously ascribed to Homer, with whose works it has been generally printed. Pigres of Caria, who lived in the times of the Persian wars, was named among the ancients as its author. It is a parody on the *Iliad,* in which the military preparations and contests of beasts, with single combats, intervention of the gods, and other Homeric circumstances, are described with much humor.

BATRACHOSPERMUM, *băt-ra-kŏ-spĕr'mŭm* [Gr. *batrachos,* a frog; *sperma,* a seed]: old genus of the old order *Confervaceæ,* a heterogeneous assemblage distributed by best authors into several sub-kingdoms even.

BA'TRACHUS: see FROG-FISH.

BATRACOPHAGOUS, a. *băt-ra-kŏf'a-gŭs* [Gr. *batrachos,* a frog; *phagein,* to eat]: feeding on frogs.

BATSCHIA, *bâts'chĭ-a* [named after *John George Batsch,* a prof. of botany in the Univ. of Jena in the latter half of the 18th c.]: genus of plants belonging to the order *Boraginaceæ,* or Borageworts. The few species known are pretty American plants.

BATSHIAN, *bâ-che-ân'* (correctly BATJAN, *bât-yân*): one of the Molucca Islands; w. of Gilolo, between 10° 13′–0° 55′ s. lat., and 127° 22′–128° e. long. It belongs to the Dutch residency of Ternate, is formed of two peninsulas, and has many mountains. B. produces gold, copper, much coal, sago, cocoa-nut trees, rice, cloves, and fine timber. There are sulphur springs. Area, 835 sq. m. Chief town, Batjan, on the e. coast. Pop. of the island, abt. 11,000, a mixed race of Portuguese, Spaniards, Dutch, and natives.

BATTA, n. *băt'tă* [Hind.]: in the British army in the *East Indies* an allowance to soldiers or public officers on active service, in addition to their pay; prequisites; wages.

BATTALINE, n. *băt'ta-līn* [compare BATTLEMENT]: a projection, or kind of veranda, of stone.

BATTALION, n. *băt-tăl'yŏn* [F. *bataillon*—from It. *battagliōnĕ*, a battalion—from *battaglia*, a battle—(see BATTLE)]: a body of soldiers of from 500 to 800 men; a body less than a regiment: *Battalion* and *Regiment* used often in same sense. BATTALIA, n. *băt-tāl'yă*, the body of battalions; the order of battle; the main body in array. BATTALIONED, a. *băt-tăl'yŏnd*, formed into ballalions.—BATTALION is a tactical unit in military organization: it comprises the greatest number of men that can be directed and controlled by word of command of an officer. In the United States army eight companies of cavalry and artillery and 10 of infantry constitute a battalion; each infantry regiment has one battalion and those in the cavalry and artillery have two. Battalions are formed into regiments, these into brigades, divisions, army corps, and armies, two or more of each lower organization combined forming the next higher. In forming a B. the companies (troops or batteries) are arranged in line according to rank of captains, the senior commanding the right company, the second in rank the left and the third the centre. The B. is divided into two wings; the companies to the right of the centre of the battalion constituting the right wing, those to the left, the left wing. If the number of companies is uneven, the right wing contains the greater number of companies. If a B. is composed of fractions of different regts., the companies of each regt. are arranged as above explained; and the fractions are then arranged in line from right to left according to the rank of the senior officer present in each, the senior on the right. Ordinarily the B. is under command of a major.—See REGIMENT: INFANTRY: English battalions are formed of 10 companies for administrative, and eight for tactical purposes. The first 25 regiments have two battalions, the remainder, originally of one battalion each, are linked in pairs according to their territorial derivation. Linked battalions are interchangeable as regards officers, and each shares the honors and advantages of the other. Two regiments of rifles have four battalions each, and the three regiments of the Guards seven battalions in all. The peace strength of a battalion is about 400 men, but varies; its war strength in the field

is 1,000.—The German infantry regt. has 3 field battalions, one being called the fusilier B. Each B. consists of 4 companies, 3 field and 1 depot company.—In the French army, most regts. have three active battalions, and one depot B.; 4 regts. of Zouaves and 3 or Turcos have each 4 battalions and a weak depot B. There are besides 36 rifle battalions (Chasseurs), and 3 battalions of light Algerian infantry (Zephyrs). The peace strength of a regt. is about 2,000.—In the Austrian army, an infantry regt. is composed of 5 field battalions of 4 companies each, and 1 depot battalion.

BATTEN, v. *băt'tn* [Goth. *gabatnan*, to thrive: Icel. *batna*, to get better]: to grow or become fat; to fatten; to live in ease and luxury. BAT'TENING, imp. BATTENED pp. *băt'tnd*. BATTENS, n. plu. *băt'tns*, a student's expenses for board at Oxford—also spelt BATTELS (see under BATTEL).

BATTEN, n. *băt'tn* [F. *bâton*, a staff or stick—see BAT 1]: a thing made of a bat or stick, as *bat-en*, made of bats; a small piece of wood or scantling for covering a crack or aperture; a strip that serves as a cleat, especially one of a series of cleats, as for battening a ship's hatchway; in lumbering, a squared timber from 12 to 14 ft. long, 7 inches broad, and 2½ inches thick. Cut into two boards (1¼ inch thick), they are used for flooring; cut into three boards, they are put on roofs below slates; in narrower pieces, they are put upright on walls for fixing the laths for plastering. In weaving, the swinging beam or lathe of a loom. V. to fasten or form strips with battens. BATTENED, pp. *bat'tnd*. BATTENING, imp. *bat-ning*. BATTENING, n. battens collectively, narrow flat of wood fixed to a wall on which laths for plaster-work are nailed. BATTERING DOWN THE HATCH, nailing long narrow slips of wood to the coamings or raised rim around a ship's hatch to secure the tarpaulins placed over the hatch, as in stormy weather. BATTEN-DOOR, a door made of narrow boards held by crosscleats or battens.

BATTER, v. *băt'tėr* [F. *battrė*, to beat from—L. *battuĕrĕ;* mid. L. *batĕrĕ*, to beat or strike]: to beat with repeated blows; to beat with great force or violence; to wear out with service: N. a mixture of various ingredients beaten together to a paste. BAT'TERING, imp.: ADJ. used to batter with. BATTERED, pp. *băt'tėrd:* ADJ. worn out by hard wear and tear. BAT'TERER, n. *-tėr-ėr*, one who. BATTER-PUDDING, a pudding made of flour, milk, eggs, butter, and salt. It is baked or boiled. BATTERING'RAM, an ancient military engine for beating down walls, consisting of a beam of wood with a mass of bronze or iron on one end, resembling the head of a *ram* [in Lat. *aries*]. In its simplest form, it was borne and impelled by the hands of the soldiers; afterward, it was suspended in a frame, and made to swing. Another form moved on rollers. The alternating motion was communicated by ropes. To protect those working it, a wooden roof (*testudo*) was constructed over it, and the

whole was mounted on wheels. The beam of the ram varied from 60 to 120 ft. in length, the head sometimes weighed above a ton, and as many at 100 men were employed in impelling the machine. When the blows were long enough continued, hardly any wall could resist. When or where it was invented is unknown. It is mentioned by Ezekiel. The Romans derived it from the Greeks.

BATTER, *băt'tĕr*, in Architecture: to slope inwards; applied to the walls of towers, which are smaller at the top than the bottom. The walls of wharfs, and those built to support embankments and the like, usually batter. BATTER-RULE, a plumb-line designed to regulate the batter or slope of a wall not meant to be vertical. The plumb-line itself is perpendicular, but the edge is as much to the side of this as the wall is intended to slope.

BATTERSEA, *băt'tĕr-sē:* a south-west district of London; in Surrey, on the s. bank of the Thames, at the bridge to Chelsea, which is nearly opposite. It lies in B. Parish, which is partly laid out in market-gardens for London, and has many manufactories. The church has a monument to the celebrated Lord Bolingbroke. The flats, called B. Fields, once famed as a rich botanical station, are now a public park, and railways have much changed the locality. Adjacent to the park, the Thames is crossed by B. Bridge (lately rebuilt), Albert Bridge, Chelsea Suspension Bridge, and a railway bridge. Pop. (1901) 168,896.

BATTERY, n. *băt'tĕr-ĭ* [F. *batterie*, a fight, a battery—from *battre*, to beat]: in *mil.*, a parapet or wall breast-high, thrown up to protect the gunners and others, and as a position for guns; any number of guns and mortars ranged in order; an apparatus for generating the electric fluid. MASKED BATTERY, a battery screened from the sight of the enemy by any contrivance.—*Battery* in military affairs is a term having several significations. It is used to designate the artillery organization which corresponds to the company in infantry, and the troop in cavalry; it is used to designate also a number of pieces of artillery in position for service; likewise the place in a work where they may be located: further it denotes certain positions in the manœuvres with individual pieces of artillery. Whenever this term is used, its precise meaning must be determined from the context.—See FORTIFICATION: ARTILLERY: ORDNANCE: also the cross-references under these; and the many specific titles. A B., in field operations, consists of two or more (usually 6) pieces of ordnance, with the necessary gun-carriages, ammunition-wagons, horses, artillerymen, and officers. In the United States army, the *personnel* of a B., of 6 pieces, numbers 5 officers and 183 men. The *matériel* for such a B. comprises 6 pieces, 12 caissons, 1 spare carriage, 1 battery-wagon, and 1 forge, besides the baggage and transportation wagons. To complete this equipment requires 23 saddle-horses, and 168 horses, 18 being spare horses for replacing those which may become

unserviceable. Two hundred rounds of ammunition are carried for each piece, 96 in the limber and caissons, and the remainder in transportation-wagons. The platforms for the pieces, when carried, are on transportation-wagons in the baggage train. There are also carried with each B. an immense number of tools and small articles; besides stores for blacksmiths, saddlers, and wheelwright for making repairs, and the necessary horse medicines. These supplies are carried in the battery and forge wagons as far as practicable. A *horse* B. is one in which the cannoneers are mounted on horses so as to be able to move with great celerity.

A B., in fortification, is a row of large guns of any number from two upward, mounted on an earthwork or other platform. It differs from an artillery or field B. in having no horses or vehicles immediately belonging to it. Siege-guns are usually placed in or on such batteries; and are valuable adjuncts in either the attack or defense of a position. The fortifications on and within the walls of a stronghold generally obtain other names than that of batteries, though particular rows of guns in certain places may be so called. Military engineers distinguish many different kinds of batteries, according to the nature of the duty that they are to fulfill, or the manner of their construction. An *elevated* B. has the parapet raised above the ground; the earth for forming the parapet being obtained by making a ditch in front. A *half-sunken* B. has the terre-plein (or floor) slightly sunk below the level of the ground. A *sunken* B. has the sole (or bottom) of the embrasures on a level with the ground. These batteries, and the guns mounted in them, are adapted to different modes of fire, and are constructed with that end in view. A *siege* B. consists of a range of heavy guns, for silencing the enemy's fire, ruining parapets and buildings, and making a breach through which infantry may enter. A *barbette* B. is especially elevated, and the pieces are fired over the parapet and not through embrasures. The accuracy of modern artillery fire increases the danger to the guns with which a work is armed, and the disabling of a piece by the enemy's fire is of greater moment now than formerly when the guns were of smaller size and could more readily be replaced. In order to protect the piece as well as the men, *depressing* carriages have been invented for use with this B. These permit the gun to be fired over the parapet as usual, and then, on recoil, allow the piece to descend behind the parapet, where it can be reloaded in safety. The *King* carriage, invented by Lt. Col. W. R. King, corps of engineers, U. S. A., is found to do this very efficiently. The lower part of the gun-carriage inclines downward and to the rear at an angle of about 30° to the horizon. The upper part of the carriage, sliding on the lower, is attached to a counter-poise by a band composed of wire ropes. This counter-poise is a heavy mass of metal descending into a well in front of the gun-carriage. The *Moncrieff* (English) B. is of the same kind. *Enfilade, en revers, en*

écharpe, ricochet, cross, oblique, etc., batteries differ chiefly in the direction in which they pour out their fire. The distinction between *gun*-batteries, *howitzer*-batteries, and *mortar*-batteries, depends on the kind of ordnance employed. In a mortar B. the mortars must be placed far enough in rear of the parapet so that the blast will not injure the interior slope.

These batteries are all nearly alike in general principle of construction. They consist primarily of an *épaulement,* or built-up shelter, behind which the guns are placed; the platform on which the guns actually rest may or may not be above the ordinary level of the ground, according to the nature of the battery. The *épaulement* or parapet is of great thickness, to resist the effects of the fire against it. The thickness at the top is usually 12 to 20 ft.; for it is found that a 24-pounder ball will penetrate 18 ft. of earth. The guns are placed 16 to 22 feet apart, behind the parapet. Some batteries are straight, with the guns all parallel; others may be portions of a triangle (*redan*) or of a polygon, and the earthwork must be constructed accordingly. There is generally a ditch 12 to 20 ft. wide outside the earthwork, and the depth from the crest of the parapet to the bottom of the ditch is 12 to 16 ft. It is from this that the earth for the parapet it obtained, and the amount of the excavation depends on the quantity of earth needed. For gun and howitzer batteries there are usually embrasures through which the firing takes place; but mortar batteries have no embrasures. Sometimes the épaulement is thrown up loosely, in haste; but for better batteries fascines, gabions, and sand-bags are largely employed. The main structure is lined with fascines 9 ft. long, and the embrasures are lined with other facsines 18 ft. long—40 to 50 of both kinds being required for each gun. The fascines are long bundles of brushwood, weighing 30 to 200 lbs. each. Sometimes sand-bags are used instead of fascines, each bag containing about a bushel of sand or earth; and sometime. gabions which are wicker cylinders filled with earth. As 6-gun sand-bag B. requires nearly 8,000 sand-bags.

BATTERY, n. *băt'tėr ĭ* [see BATTERY 1]: in *law,* any unlawful beating or wounding, or other wrongful physical violence or constraint inflicted on a person—either in wilfulness or carelessness: see ASSAULT AND BATTERY.

BATTERY, CLOSED CIRCUIT: see *Gravity Cells* under caption BATTERY, ELECTRIC.

BATTERY, ELECTRIC: properly a number of voltaic cells connected together so that the sum of their united electrical effects is made available for use. The word is most often used, however, to denote a single voltaic cell. Any electric cell is, in general, a device for converting the energy set free by chemical decomposition, into electrical energy. There are numerous forms and types. They all depend, however, for their action on the following principles:

If two pieces of metal or other conductors of electricity

(such as carbon), the two being of a different character, be immersed in a chemical solution which acts more rapidly on one of the immersed conductors to dissolve it, than on the other, an electric pressure or electro-motive force (see *Electricity, principles of*) is produced, and, if the two conductors (or electrodes) do not touch each other, but are connected by a wire leading from one electrode to the other, electric current will flow through the connecting wire, and such electrical devices as may be connected in circuit with the wire are also traversed by the current. When current is generated and flows through the battery circuit the element or electrode most affected is gradually eaten away or dissolved and the quantity of the substance that is dissolved is proportional to the rate of current flow and the length of time the current is supplied by the battery; that is, the amount of the electrode dissolved

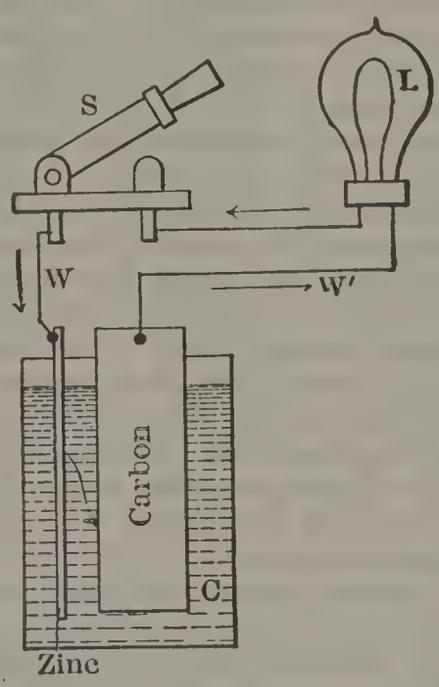


Fig. 1.

is proportional to the total quantity of electricity taken out of the cell. When there is no connection between the two electrodes, the chemical action is greatly reduced —in some types of cells it practically ceases, and only takes place when current is flowing. Referring to Fig. 1, if C be a containing cell or vessel, zinc one element or electrode, and carbon the other electrode, the two being immersed in a conducting liquid (called electrolyte), L a lamp and S a switch by which the electrical connections W and W′ are joined in a continuous circuit the path of the current will be from the carbon through wire W′ to L, thence through the switch S and wire W, to the zinc. From the zinc, it passes through the liquid to the carbon, thus completing the circuit.

The electro-chemical theory of the electric cell is as follows: When current passes through a liquid,

the water in the liquid is decomposed into its constituent gases, viz., hydrogen and oxygen, the oxygen forming at the electrode which the current leaves to pass *into* the liquid and the hydrogen forming at the electrode to which the current passes in leaving the liquid. The action of the H and O is to combine with the chemicals in the liquid and form a compound which attacks one or both electrodes. When current flow is stopped by opening the circuit the decomposition of the liquid ceases and the chemical action on the electrodes either no longer takes place or is much reduced. There are many types of electric cells, the most frequently used being the Sal-ammoniac, the Leclanché, the Bichromate, the Gravity and the Edison-Lalande, more specifically described below.

Sal-ammoniac cells are used for intermittent service such as supplying current to electric bells, buzzers and the like. They cannot be used for any purpose requiring a supply of current continuing longer than a minute or two, for the reason that they rapidly polarize—that is, the hydrogen set free by the action of the current on the liquid does not combine chemically with any of the elements in the cell and it accumulates on the negative electrode. Hydrogen being a strongly electro-positive element, its accumulation on the negative electrode tends to neutralize the normal electro-motive force of the cell. Furthermore the gas bubbles around the electrode prevent the liquid from coming in good contact with it and therefore a high resistance to the passage of the current results. These effects—called *Polarization*—quickly cause the cell to lose its power of giving out current. After a short time of rest, however, the hydrogen bubbles pass off and the cell is again operative.

The sal-ammoniac cell is made up of one electrode of carbon, and one of zinc immersed in a solution of sal-ammoniac (Ammonium chloride, NH_4Cl), the containing vessel being usually of glass. Neither electrode is affected when no current passes through the cell. The passage of current causes the Cl in the solution to combine with the zinc to form zinc chloride ($ZnCl_2$). Also ammonia (NH_3) and free hydrogen (H) are produced at the carbon electrode. The ammonia dissolves in the liquid, and the hydrogen collects on the carbon—thus producing the polarizing effect. The zinc elecrode is eaten away; the carbon is never attacked. The usual sal-ammoniac cell is made with a small rod of zinc and a large carbon electrode—generally cylinder shaped to present a large surface for the released hydrogen to cover. The greater the surface of the carbon electrode the greater is the amount of hydrogen necessary to cause polarization and consequently the longer the cell will work before becoming polarized and requiring a rest.

The Leclanché cell is a sal-ammoniac cell which is provided with the usual carbon and zinc electrodes, immersed

in a sal-ammoniac solution, and in addition, manganese dioxide (MnO_2) is placed inside the cylindrical carbon electrode. The MnO_2 acts as a 'depolarizer'—i.e., it combines with the hydrogen produced by the action of the electric current, forming Mn_2O_3. The hydrogen being thus absorbed it cannot collect on an electrode and consequently the cell cannot polarize. It therefore is suitable for use where a continuous supply of current is required. The voltage of a sal-ammoniac cell is about 1.3 volts.

In making up a solution or electrolyte to use in these cells, the proper proportions are about 5 ounces of ammoniac to one quart of water.

The Bichromate cell consists of zinc and carbon electrodes immersed in a solution of sulphuric and chromic acids (H_2SO_4 and CrO_3). When delivering current the zinc is dissolved by the sulphuric acid and forms zinc sulphate ($ZnSO_4$). The hydrogen liberated combines with the oxygen of the chromic acid, forming water. The hydrogen being thus absorbed, the cell does not polarize and can be used for continuous work. To make the solution, sulphuric acid is poured into a solution of potassium bichromate. The usual proportions are: Potassium bichromate, 1 pound dissolved in 12 pounds of water; pour into this solution 2 pounds of sulphuric acid. Cells of this type have the disadvantage that the zinc is eaten away slowly even when no current is taken from them and they are therefore usually constructed so that the electrodes may be easily raised from or lowered into the electrolyte, in order to submerge the electrodes, only when the battery is in use. For this reason they are often termed *plunge batteries.* Their chief advantage lies in their ability to give a high voltage, each cell giving 2 volts when fresh.

The Gravity cell is also known as the *Bluestone* and the *crowfoot.* It belongs to the 'closed circuit' genus of cells; that is, it must discharge some current continuously, otherwise it will be subject to injurious action. Its principle uses are for telephone, telegraph and electric fire-alarm circuits. The electrodes consist of a copper positive and a zinc negative, both being formed with radial projections which give them a fancied resemblance to the foot of a fowl, hence the appellation 'crow-foot' cell. The copper electrode lies on the bottom of the glass containing cell, while the zinc electrode is suspended from the upper edge of the vessel and is near the surface of the solution. Crystals of Blue-stone (copper sulphate) are placed in the bottom of the cell which is then filled with water. After standing a short while, the blue-stone is partly dissolved in the lower part of the cell and the solution rises up from the bottom through the water mixing with it. The solution will finally reach up to the zinc, unless the circuit is closed and current is taken from the cell. When giving out current the zinc is dissolved, forming zinc sulphate, which mixes with the water near the top of the cell, while copper is deposited from

the blue-stone solution (which latter remains at the bottom of the cell) on the copper electrode, there being a fairly distinct division between the two different solutions. If, however, current is not taken from the cell, the blue-stone solution will rise up to the top of the cell, copper will deposit from it on to the zinc and harmful local action is set up which eats away the zinc and exhausts the solution by abstracting the copper therefrom. The zinc sulphate solution being higher than the blue-stone solution the former tends to keep at the upper part of the cell and the latter near the bottom, hence the name 'gravity' cell.

The voltage of this type of cell is about 1.104 volts.

The Edison-Lalande cell is made up of a positive electrode of zinc and the negative electrode of copper oxide, the two being immersed in a solution of caustic soda or

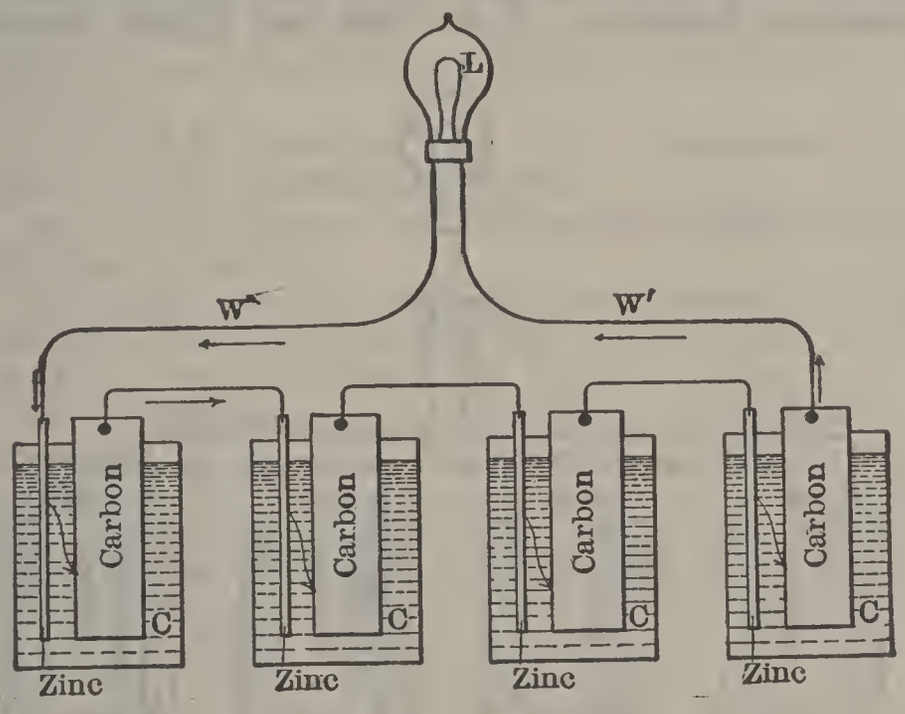


Fig. 2.

potassium. The copper oxide is in the form of a slab which is supported in a frame of copper. When supplying current the zinc is dissolved and the hydrogen which is released travels to the copper oxide electrode and combines with it, abstracting some of the oxygen to form water, and leaving the metallic copper.

A thin layer of paraffine oil is poured on top of the solution and by reason of its lightness and inability to mix with the solution it floats on top of the liquid effectually sealing the cell from the air and thus prevents evaporation and keeps the carbonic acid gas in the air from acting on the solution to form a carbonate. The voltage of this cell is about 0.7 volt.

Batteries, Working of. In working cells which are aggregated together to give a higher voltage than a single cell produces, or a greater current, or a combination of

both, they are connected in series, or in parallel or a combination of both.

Fig. 2 shows the method of connecting cells in series. Four cells are shown thus joined, making a battery, and supplying current to an incandescent lamp. One terminal of the lamp is joined to the zinc electrode of cell No. 1, while the other lamp terminal is connected to the carbon electrode of cell No. 4. Connected in this manner the total voltage supplied to the lamp is equal to the sum of the voltages of each of the cells. Thus if they are Sal-ammoniac cells giving 1.3 volts each, the four so connected will give $4 \times 1.3 = 5.2$ volts between the zinc terminal of cell No. 1, and the carbon terminal of cell No. 4. Since, however, all the current used passes through each cell, the amount of *current* which may be taken from the four cells so connected is equal only to that which one cell is capable of furnishing. If the cells vary in size, the vol-

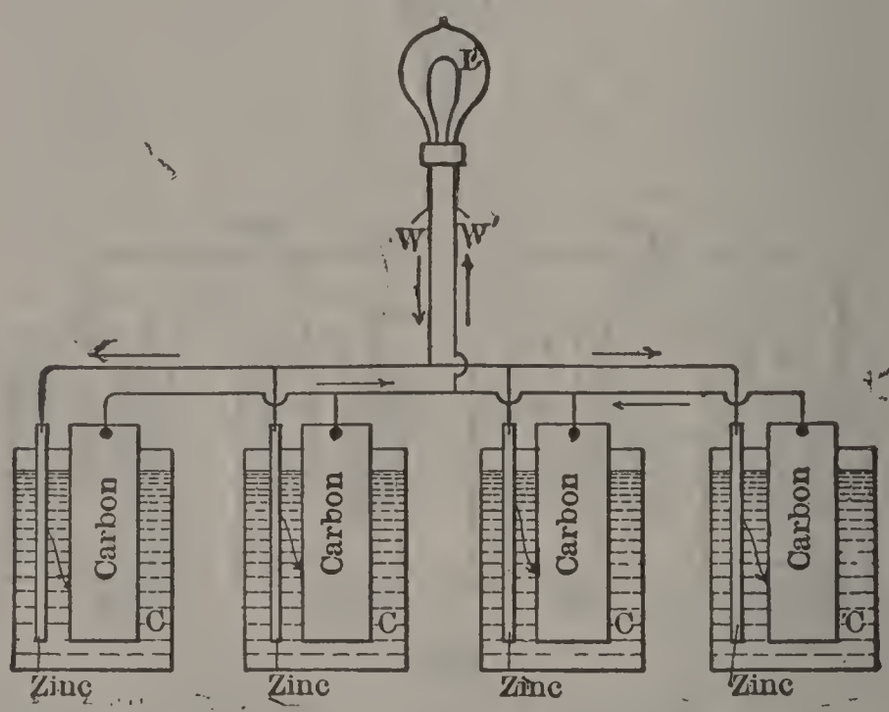


Fig. 3.

tage is not affected, this being independent of the size of the cell, but the current which may be taken from the battery is limited to that which the smallest cell of the series is capable of discharging.

Fig. 3 shows the method of connecting cells in parallel. All the zinc electrodes are joined together and all the carbon electrodes are also joined together. The lamp or other electrical device is connected by one wire to the common connector joining all the zincs and by the other wire to the common connector joining all the carbons. Thus connected the voltage of the circuit is equal to that of any one cell, but the available current is the sum of the currents which the various cells are capable of supplying. Of course all the cells so connected must be of the

same type and give the same voltage, otherwise the higher voltage cells will discharge into those of lower voltage. Where a large voltage and quantity of current both are required, combinations of several series circuits, each of the series circuits being joined in parallel, are provided. The number of cells of any kind in series is equal to the required voltage of the circuit divided by the voltage per cell. Thus on a 100 volt circuit, 50 storage cells giving 2 volts each, are necessary.

Bibliography.—The principal and standard works on batteries are: *Primary Batteries*, by Prof. H. S. Carhart; *Practical Electricity*, by W. R. Ayrton; *Modern Practical Electricity*, by R. Mullineux Walmsley; *The Theory of the Lead Accumulator*, by F. Dolezalek; *Secondary Batteries*, by E. J. Wade; *Storage Battery Engineering*, by Lamar Lyndon.

BATTERY, Galvanic: another term for chemical electrical cells. So called because Galvani, an Italian physicist, was one of the originators of the chemical electrical cell.

BATTERY, Open-circuit: see *sal-ammoniac Cells* under caption Battery, Electric.

BATTERY, Plunge: see *Bichromate Cell* under caption Battery, Electric.

BATTERY, Primary: any chemical electric cell which furnishes electric current by the decomposition of one or both of the electrodes: see Battery, Electric.

BATTERY, Secondary: see Battery, Storage.

BATTERY, Storage: a form of chemical electric cell in which the electrodes are not dissolved by the liquid, but which simply undergo a chemical change when supplying current, which change is produced, as in any chemical battery, by the action of the oxygen released at the positive and the hydrogen produced at the negative electrodes. When the battery is exhausted, i.e., the availble elements of the two electrodes so far chemically changed, that little or no current can be obtained from the cell, it may be restored to its active condition and made ready to again give out current, by passing electric current through it from some other source, the flow of the current being in a direction opposite to that in which it flows when coming from the battery. The cell is said to be 'discharging' when supplying current, and 'charging' when current is being supplied to it to re-energize the electrodes.

The storage battery of commerce is made up of positive electrodes of lead peroxide (PbO_2) and negative electrodes of sponge lead (Pb) (i.e., pure lead in a finely divided and spongy state) immersed in an electrolyte of dilute sulphuric acid (H_2SO_4), the usual strength of the solution being about one-third acid to two-thirds water. The materials of the electrodes—called the 'active material'—having little or no mechanical strength are supported on leaden sheets or frameworks.

BATTERY.

There are two types of storage cells, one is called the Planté from the fact that Gaston Planté in 1860 produced the first cell of this character. In this cell, the active material is produced from the lead of the supporting lead sheet, by electro-chemical action which changes the surface of the sheet into lead peroxide or sponge lead according to the process used, leaving underneath this outer covering of active material the unchanged metal of the sheet for conducting the current and supporting the active material. The other type is known as the pasted or Faure plate—the latter name being given it because of its invention in 1880 by Camille A. Faure, a French electrician. It is produced by making a flat leaden form or framework adapted to hold the active material. Mixtures, made up usually of litharge (PbO) and red lead (Pb_3O_4) slightly moistened with dilute sulphuric acid, are 'pasted' or pressed into frames,—called 'grids', and compacted under heavy pressure. The electro-chemical formation then is quickly effected since there is but little change for the material to undergo to pass from PbO to Pb or to PbO_2 as the case may be.

The resulting active materials and the action of the battery are the same, no matter which method of manufacture be adopted.

On charge and discharge the oxygen and hydrogen combine with the acid of the electrolyte and the chemical elements of the active materials as follows:

$$PbO_2 + Pb + 2H_2SO_4 = 2PbSO_4 + 2H_2O.$$

This is called the reversible chemical equation of the storage battery and shows the action on discharge when read from left to right. Read from right to left it shows the action on charge.

In plain words, the PbO_2 of the positive plate and the Pb of the negative plate change to lead sulphate ($PbSO_4$) by reason of the action of the hydrogen released at the positive electrode (which becomes the negative when discharging) which tends to de-oxidize the active material by combining with the oxygen to form water while at the negative electrode (which is positive on discharge) the released oxygen tends to oxidize the pure lead (Pb). The SO_3 of the H_2SO_4 combines at the same time with both and forms lead sulphate on each plate.

On charge the inflowing current being in a reverse direction the liberation of hydrogen and oxygen takes place on the positive and negative electrodes respectively, and the chemical action being reversed the active material is reduced to its former active condition.

From these conditions it is easily seen that the electrolyte is more dilute—less dense—at the end of discharge than at the beginning as SO_3 is abstracted from the electrolyte during discharge. Also the addition of the SO_3 to the active material increases its volume and causes it to expand with discharge and contract with charge. Furthermore it is obvious that electricity is not stored in a

storage battery. It simply performs certain chemical work to rejuvenate the electrodes.

The voltage of a cell is approximately 2 volts, being about 2.4 volts at the end of charge, falling rapidly to 2.1 volts when discharge begins, maintaining a potential of 2 volts over the greater period of its discharge and falling to 1.75 volts at the end of discharge.

The capacity of a storage cell depends on the area of the plates or electrodes in the cell. The unit of capacity is the ampere hour, i.e., one ampere supplied continuously for one hour. Thus a 100 ampere hour cell is one which would give 12½ amperes continuously for 8 hours before requiring recharging. By making various sizes of plates and putting a greater or less number into a cell the capacity per cell may be made nearly any desired value.

Storage batteries are usually charged by current from dynamos, and may be moved to any point after charging and the energy stores in them utilized. Usually, however, they are installed to work in conjunction with dynamos. Thus if a dynamo must supply 500 lamps during part of the night and 1,000 lamps during another part, the dynamo is made large enough to supply 750 lamps. When furnishing current to 500 lamps the excess current passes into the battery and stores itself in the form of chemical energy. Later when the load is 1,000 lamps the battery supplies current to the amount necessary to light 250 lamps and the dynamo furnishes the current for 750 lamps. Thus the load on the dynamo and its driving engine is constant although the current demand is variable, and the dynamo is smaller than would be required without the battery since it would otherwise have to be large enough to supply current to 1,000 lamps. Also in electric railways, where at one minute some of the cars are starting, requiring a large amount of current per car, and other cars may be ascending hills, making the total current requirements for that short time very great, as compared with the current which may be supplied one minute later when the cars are all running and some are descending grades, the storage battery is very useful in equalizing the rapid variations in load, absorbing current at the instants of light load and discharging to help the dynamo at periods of heavy load.

As the voltage of a storage battery varies with charge and discharge, rising with charge and decreasing with discharge, it is necessary in cases like electric railway or elevator loads to use an auxiliary dynamo called a 'booster' to make the charge and discharge currents just equal to the change in requirements. The booster adds an electro-motive force or voltage to the circuit to send current into the battery when the load demand is light, and it reverses its voltage and adds it to that of the battery to cause discharge when the load requirements are in excess of the main dynamo capacity. These changes are caused automatically by special windings or controlling devices which vary with variation in the external

load. There is a large number of types of automatic boosters manufactured by the different makers of storage battery equipments.

The storage battery business in the United States amounts to about $5,000,000 annually, being a most important branch of electrical manufacture.

BATTERY, VOLTAIC: another name for any chemical electrical cell which comprises two electrodes immersed in an electrolyte. Cells are also known as Voltaic Couples; name derived from the Italian scientist Volta, who with Galvani shares the honor of first having made chemical generators of electricity.

BATTHYANYI, *bŏt'yân-yē*, BALTHASSAR VON, lived in the latter half of 16th c., head of the B. family, which was one of the oldest, richest, and most celebrated families of the Hungarian magnates, tracing its origin as far back as the invasion of Pannonia by the Magyars, 884, and which has given to Hungary many warriors and statesmen. The surname is derived from lands obtained in the 14th c. Balthassar fought with distinction in the Turkish wars, and constantly maintained at his own expense 1,200 infantry and 500 cavalry.

BATTHYANYI, CASIMIR, Count: 1807, June 4—1854, July 13. He was minister of foreign affairs in Hungary during the insurrection in 1849, in which he also distinguished himself as a military governor. After the catastrophe of Vilagos, he fled with Kossuth, into the Turkish territory, where he remained till 1851. He died at Paris.

BATTHYANYI, CHARLES, Prince of B., Lieu. Field-marshall of the Empire: distinguished in the Bavarian War of Succession, and particularly by a victory over the French and Bavarians at Pfaffenhofen, 1745, Apr. 15.

BATTHYANYI, LOUIS, Count: 1809–49, Oct. 6; b. Presburg. He espoused the national cause, yet seeking to maintain the connection with Austria and his allegiance to the Austrian sovereign, was appointed pres. of the ministry, when Hungary obtained a ministry of its own, 1848, March. His ability was not equal to the goodness of his intentions, in the difficult and embarrassing circumstances in which he was called to act. He did not hold the office long, and afterwards took part in public affairs, chiefly as a member of the diet, and with great moderation. Yet, after the Austrians entered Pesth, he was arrested, 1849, Jan., and was put to death under sentence of martial law. His condemnation was unexpected, and awakened the more sympathy, because all men regarded it as unjust.

BATTLE, n. *băt'tl* [F. *bataille; It. battaglia*, battle—from mid. L. *battĕrĕ*, to beat as with a stick: mid. L. *batālĭă*, a battle]: a fight between enemies; an encounter between armies: V. to contend in fight. BATTLING, imp. *băt'ling:* N. conflict; fighting. BATTLED, pp. *băt'tld:* ADJ. furnished with battlements. BATTLE-ARRAY, n. *băt'tl-ăr-rā'*, order of battle. BATTLE-AX, *-ăks*, a sharp ax, with a long

handle, formerly used in war; a halberd. BATTLE-CRY, shout of troops when engaging in battle. BATTLE-FIELD, the place where a battle between armies has been fought. BATTLE-FRONT, front presented by an army drawn up in order of battle. BATTLE-ROYAL, battle of game cocks in which more than two are engaged; a *mêlée*, in which more than two persons fight each other with fists and cudgels. BATTLE-SONG, song sung by troops to animate them when proceeding to battle. BATTLE-WORD, words, signals, or watchword given forth by a leader to his followers when engaging in battle. PITCHED BATTLE, a battle deliberately arranged, and fought out between contending armies. WAGER OF BATTLE, one of the forms of ordeal or judicial appeal of the old law of England, which consisted in an armed contest between the plaintiff and defendant before the court, the victor being declared the gainer of his case in law—finally abolished 1819: see BATTEL, TRIAL BY. DRAWN BATTLE, one in which neither side gains.—SYN. of 'battle, n.': combat; engagement; action; fight; conflict.

BAT'TLE: town in e. Sussex, 6 m. n.w. of Hastings, where the country rises in wooded swells. It consists of one street, built along a valley extending from n.w. to s.e. Till of late, B. was noted for its manufacture of gun powder, known as B. powder. It was anciently called Hetheland or Epiton, and derives its present name from the battle of Hastings, fought on the heath between it and Hastings, 1066, Oct. 14, when the Normans, under William the Conqueror, finally overthrew the Saxon dynasty in England. William, to commemorate his victory, founded 1067, on the spot where Harold's standard was taken, a splendid abbey, which was endowed with all the land within a league of it. The abbey had the privileges of a sanctuary, and the Conqueror's sword and a roll of his barons were deposited in it. The existing ruins of B. Abbey, which belong to a building erected after the original abbey, occupy three sides of a quadrangle, and are a mile in circumference. Pop. of B. (1901) 2,990.

BAT'TLE: combat between large masses of troops, or whole armies. Every B. ought to have for its object the determination, if possible, of the whole contest, or at least the effecting of some important step to that end. It is therefore the aim of a general to bring about an engagement at the decisive point. This constitutes Strategy, while Tactics is concerned with the handling of the troops in the actual battle. Victory on the battle-field is not enough for a general; it is only by following up his victory to the annihilation, if possible, of the beaten army, that its fruits are secured. ORDER OF B. is the particular way in which the several corps of different arms are disposed for entering into an engagement. It varies at different times, and is modified according to locality.

No general account of a B. can be given. See ATTACK: ARTILLERY: CAVALRY: INFANTRY: CHARGE: FLEET: GUN-

NERY: TACTICS, etc. For the more important battles and their causes and results, see the names of their localities.

Considered in their political relations, the importance of battles is not always in proportion to their magnitude. 'There are some battles which claim our attention, independently of the moral worth of the combatants, on account of their enduring importance, and by reason of their practical influence on our own social and political condition. . . . They have for us an actual and abiding interest, both while we investigate the chain of causes and effects, by which they have helped to make us what we are; and also while we speculate on what we probably should have been, if any one of those battles had come to a different termination.'—Creasy's *Fifteen Decisive Battles of the World, from Marathon to Waterloo.* (Since Waterloo, the most decisive have been, Gettysburg 1863, Sadowa 1866, Sedan 1870, Battle of the Sea of Japan 1905.)—Creasy's list is as follows: to it might well be added, Actium B. C. 31, Lepanto A.D. 1571, Trafalgar 1805.

B. C.
490. Battle of Marathon.
413. Defeat of the Athenians at Syracuse.
331. Battle of Arbela.
207. " " the Metaurus.

A. D.
9. Defeat of the Romans under Varus.
451. Battle of Chalons.
732. " " Tours.
1066. " " Hastings.
1429. Joan of Arc's victory at Orleans.
1588. Defeat of the Spanish Armada.
1704. Battle of Blenheim.
1709. " " Pultowa.
1777. Defeat of Burgoyne at Saratoga.
1792. Battle of Valmy.
1815. " " Waterloo.

BAT'TLE-AX: a weapon much used by the early northern nations, Celtic and Scandinavian, requiring great strength in its use. Some axes were held with one hand, some with two; the former kind could be wielded equally by horse and foot, but the latter was for foot-soldiers only. The B. had a longer handle, and a broader, stronger, and sharper blade than the common ax. During the middle ages, and somewhat earlier, it was much used in sorties, and to prevent the escalading of a besieged fortress. The *pole-ax* differed but little from the battle-ax. The *black bill* and *brown bill* were a sort of halbert, having the cutting part hooked like a woodman's bill, with a spike projecting from the back, and another from the head. The *glaive* was a kind of pole-ax or bill used by the Welsh.

BATTLE CREEK: chief town (not the cap.) of Calhoun co., Mich., on the Grand Trunk Western, Michigan Central and Detroit, Toledo and Milwaukee railroads, and on the Kalamazoo river, at the mouth of Battle Creek; which furnishes here abundant water power. There are

large plants manufacturing threshing machines, traction engines and steam pumps; there are also planing mills, boiler works, brick yards, flouring mills, foundries, cigar factories, bottling works, ice plants, ironworks, candy factories, a brewery, pipe-organ factory, etc. The city is also noted for the manufacture of cereal foods. Pop. (1900) 18,563; (1910) 26,267.

BATTLEDORE, n. *băt'tl-dōr* [Sp. *batador*, a washing-beetle: F. *battre;* Sp. *batir*, to beat]: a toy used in play, with a handle and flat part, for striking a shuttle-cock.

BATTLEFORD, *băt'tl-ford:* settlement in Saskatchewan, Northwest Territory of Canada, at the junction of the Battle river with the Saskatchewan, a little north of the route of the Canadian Pacific railway. The territory was organized as a part of the dominion 1875, and some government buildings have been erected at B. The country near is rolling-prairie without tree or bush. Pop. (1901) 797.

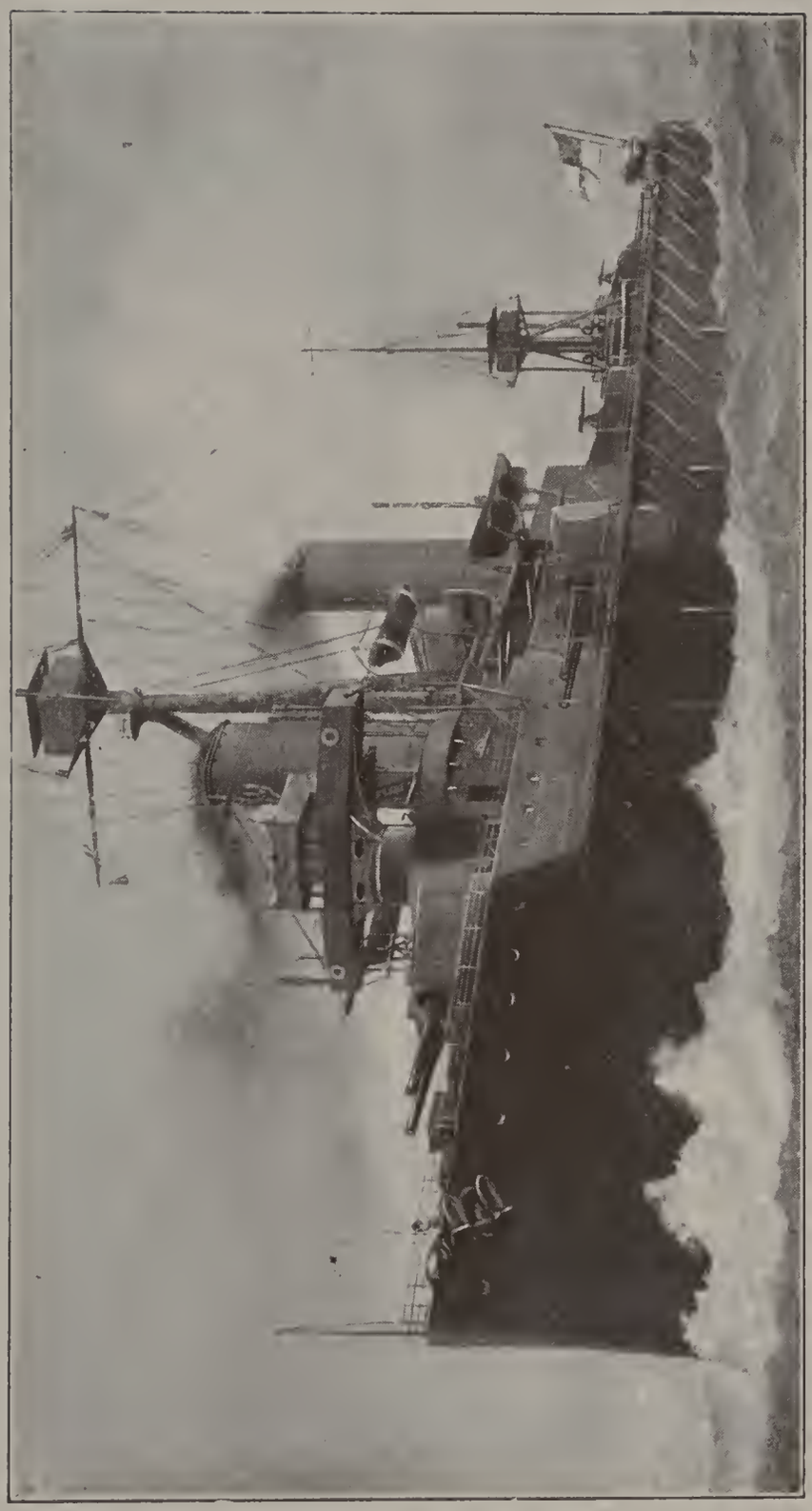
BATTLEMENT, n. *băt'tl-mĕnt* [OF. *bastiller*, to fortify]: a wall pierced with openings, or made notch-like, for military purposes, or for ornament; a notched or indented parapet fortification. The rising parts are called cops or merlons; the spaces by which they are separated, *crenels*, embrasures, and sometimes loops. The object of the device is to enable the soldier to shelter himself behind the merlon, while he shoots through the embrasure. The bas-reliefs of Nineveh, and the Egyptian paintings, testify to its antiquity. BAT'TLEMEN'TED, a. having battlements.

BAT'TLE-PIECES: paintings representing battles. The modern mode of warfare is less favorable for this branch of art than the ancient, where personal valor had more room to display itself. Among the greatest paintings of this kind are the battle of Constantine, sketched by Rafael, and executed by Giulio Romano; Lebrun's battles of Alexander; and the battle of the Amazons by Rubens. In lesser engagements Antonio Tempesta, Hans Snellink, Pet. Snyders, Fulcone, Horace Vernet, Wouverman, etc., are distinguished. In the U. S. Rothermel's *Gettysburg* and Walker's *Battle Above the Clouds* are greatly prized.

BATTLESHIP: the largest and heaviest type of war vessel, intended to bear the brunt of the severest fighting in naval warfare. The most marked characteristics of the B., therefore, are large guns and thick armor, to which other desirable elements, even speed, are sacrificed. The armament of the modern B. consists of the main and the secondary batteries. The main battery consists of the heaviest guns, those firing shells and armor-piercing projectiles, while the secondary battery consists of small rapid-fire and machine guns for use against torpedo boats and to attack the unprotected or lightly protected gun positions of the enemy. The main battery usually consists of from 4 to 12, 10, 12 or 13-in. breech-loading guns, mounted in pairs in revolving barbette turrets, one

forward and one aft, on the centre line of the ship. Occasionally these guns are mounted *en barbette*, that is, the gun projects over a circular wall of armor, without the revolving turret or hood. The arrangement first described is, however, the more common. In addition to these heavy guns, a number of smaller guns of 5-8 in. are usually mounted on each broadside, though often 8-in. guns are also mounted on turrets. A battery arrangement that has been quite common in the U. S. navy is to have in addition to the 12 or 13-in. gun turrets, four smaller turrets, each containing two 8-in. guns. These turrets are arranged two on each side, the forward two somewhat abaft the forward large turret, and the after two forward of the after large turret. Later this arrangement has been somewhat changed by superposing one of the 8-in. turrets on each side of the large turrets, the other two in some cases being placed one on each side of ship about amidships, while in other cases they were omitted entirely, their place being taken by a greater number of broadside guns. The superposed turret is entirely an American invention, and has not yet been introduced in other navies. One of the first B. built for the U. S. navy, the *Indiana*, carries four 13-in. guns, eight 8-in. guns, and four 6-in. guns; the B. of the *Alabama* class were the last to be equipped with 13-in. guns; later vessels replaced the four 6-in. guns with twelve 7-in., while the great 26,000 ton *Arkansas* and *Wyoming*, begun in 1910, will have in the main batteries twelve 12-in. breech loading guns and twenty-one 5-in. rapid-fire guns.

The armor of the B. is thicker and heavier than that of any other type of war vessel, though arranged in much the same way as in the cruisers. The basis of this armor is the protective deck, covering the whole of the vessel at or a little above the level of the water line, and extending the entire length of the ship; at the side it slopes, meeting the sides of the ship 3 or 4 ft. below the water line. At the water-line the heaviest armor, called the water-line belt, is usually placed. The lower edge of this belt rests on a projection or ledge, known as the armor shelf, at the point of meeting of the protective deck and the ship's side; it is therefore 3 or 4 ft. below the water-line, and extends about the same distance above. This water-line belt in the best ships is extended from bow to stern. The barbettes, the guns, and all the machinery for firing them are protected by an athwartship line of armor from the water-line to the barbettes, resting upon the protective deck and of the same thickness as the belt. The broadside batteries are protected by the upper and lower casemate armor which follows the same direction as the diagonal armor, extending above and below the broadside gun ports; it is usual also to isolate each broadside gun from its neighbors by a light nickel steel bulkhead, and the broadside guns on one side from those on the other by another similar fore-and-aft bulkhead. The tendency



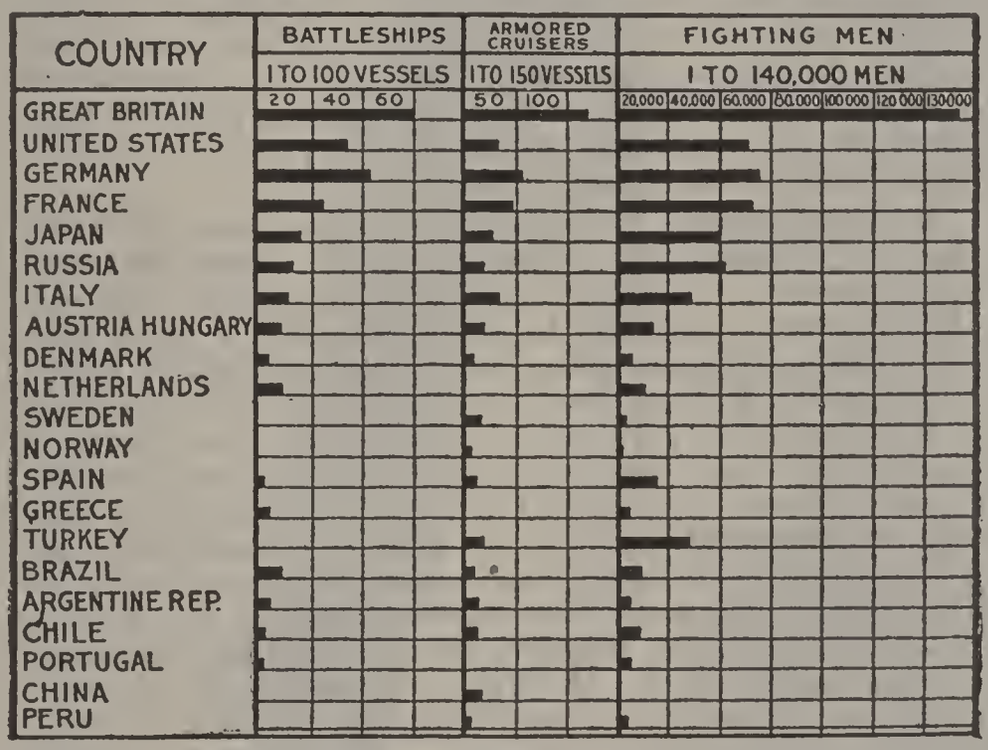
BRITISH BATTLESHIP "DREADNOUGHT."

Designed on results of the Japanese war. Built, 1906; displacement, 18,000 tons; speed, 21 knots; coal supply 2,700 tons; motive power, 4 turbines; number of guns, ten 12-inch. with the unprecedented velocity of 2,900 feet per second, capable of penetrating 22 inches of armor 3,000 yards and 17½ inches at 5,000 yards

is to increase the protection for these broadside batteries, even at the expense of lightening the water-line belt. A vertical armored tube, resting on the protective deck, protects the conning tower and the mechanical signaling and steering gear. The developments in the construction of B. have been in the direction of increasing the size of the ship, reduction in the size of largest guns, made possible by improved projectiles and materials, an increase in the size of rapid fire guns, an improvement in the quality of armor, an increase in speed due to improved machinery and higher grades of material.

A glance at the chart which omits all battleships and armored cruisers over twenty years old from date of launching but includes vessels now (1910) building, or nearing completion, but does not include coast defence vessels, shows that Great Britain leads considerably in

BATTLESHIPS OF THE WORLD AND THEIR CREWS.



battleship and cruiser strength, also in fighting men. Next to Great Britain, Germany has the largest number of battleships and also of cruisers (52), although France is a close third in the latter respect (50). France has the largest number of torpedo boats (231 and 16 building), England next (276 and 42 building), Russia third (189), Germany fourth (157 and 24 building), Italy fifth (147 and 4 building). England now possesses 57 submarines and is building 23, France has 49 and is building a like number, U. S. has only 12 and building 2.

BATUM, or BATOUM, *bâ'tôm':* former Turkish fortified port, now a Russian possession and chief port of the province of the Caucasus, on the e. shore of the Black Sea. The inhabitants are mostly Russians. The Berlin congress (1878) sanctioning its cession to Russia, made it a free port; but this stipulation was repudiated by Russia 1886. The

Russians have spent $2,500,000 on a new harbor, one of the best on the Black sea. A powerful series of batteries defends it. The petroleum product of the Caspian region (see BAKU) finds here its chief outlet over a railway 560 m. long. B. is also the terminus of the Transcaspian railway, nearly 900 m. long, a channel for the trade of Central Asia. Immense oil storage accommodations are provided, and a fleet of 39 tank-steamers ply to European ports. Pop. abt. 30,000.

BAUBLE, n. *baw'bl:* see BAWBLE.

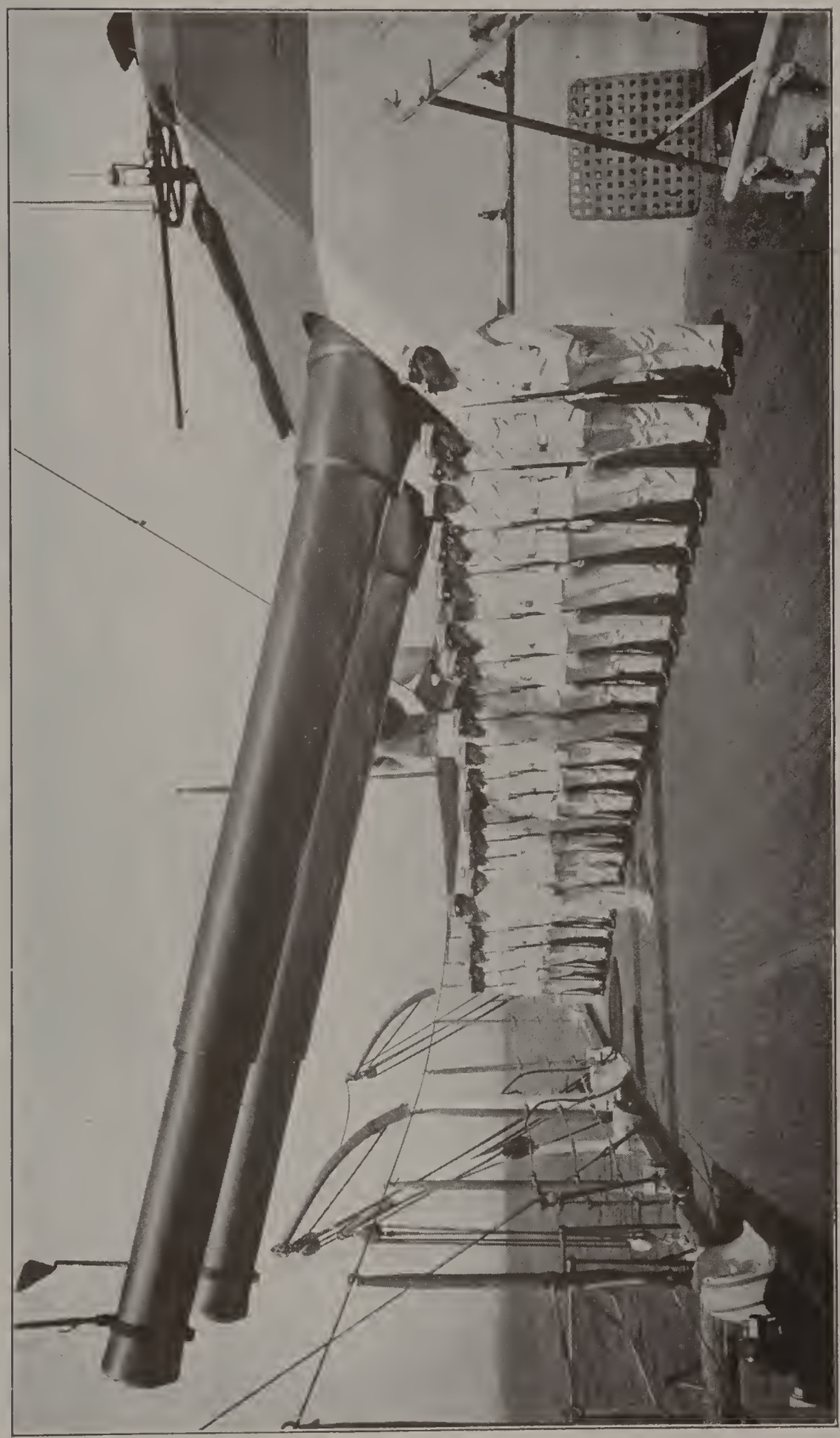
BAUCIS, *baw'sĭs* [L. *Baucis*, the wife of Philemon; any poor pious old woman]: an asteroid, the 172d found; discovered by Borelle, 1877, Feb. 5.

BAUD, *bō:* town of the dept. of Morbihan, France; on the Evel, 20 m. n.w. from Vannes. It has some trade in grain, cattle, hemp, butter, and honey. Near B. is a statue of granite, known as the *Venus of Quinipily*, worthless as a work of art, but remarkable for its history. Its origin is unknown, but it is supposed from its Egyptian character, to be a Gallic Isis. Down to the 17th c., it was worshipped with foul rites, and even now is regarded with superstitious veneration by the peasantry. It appears to have been first called Venus in inscriptions on the pedestal set up in 1689. Pop. of B. about 2,000.

BAUDELAIRE, *bōd-lār'*, PIERRE CHARLES: 1821–67, Aug. 31; b. Paris: a poet belonging to the extreme left of the romantic school of which Gautier was the head. He was known first as a critic. *Les Fleurs du Mal*, a poem pub. 1857, secured him a name, but brought on him a public prosecution; and parts of the work were condemned as morally unfit for publication. Both the subject and the manner of all his work displayed intense opposition to the rules of French classicism; but B. was distinguished from his fellow-romanticists by his delight in positively unpleasant subjects, and by the unnatural extravagance of his fancy. He wrote also *Gautier* (1859), *Les Paradis Artificiels* (1860), *R. Wagner* (1861), and some volumes of admirable criticisms. His French rendering of the works of Edgar Allan Poe, is one of the most perfect of translations.

BAUDKIN, *bawd'kĭn*, or BAUDEKIN, or BAWDEKIN, n. *baw'dĭ-kin* [so named from its supposed original place of manufacture, *Baldacca* or *Bagdad*, modified under the influence of It. *baldachino*, a rich gold stuff, a canopy]: a rich silk stuff interwoven with gold thread, and embroidered—formerly used for garments by the nobility, for church vestments, and altar-hangings, and canopies, whence the name *baldachin*, which see.

BAUER, *bow'ėr*, BRUNO: 1809, Sep. 9—1882, Apr. 13; b. Eisenburg, duchy of Saxe-Altenburg: biblical critic and philosopher, belonging to the extreme school of German rationalism. He studied at the Univ. of Berlin, and early chose as his department of study, the scientific criticism of Scripture—a criticism based on the principle that the Bible



After pair of 12-inch guns on the Battleship "Missouri."

is to be studied as a merely natural product with no reference to its real or supposed supernatural origin. In 1839 B. became a *privat-docent* in the Univ. of Bonn; but in 1842 was forbidden to deliver any more theological lectures, whereupon he removed to Berlin. He passed through various stages of anti-supernaturalism. At first, he contented himself with believing that the substance of the Christian religion might be extricated from the entanglements of a confused and erroneous system of interpretation. This idea runs through his earliest works, his *Criticism of Strauss's Life of Jesus* (1836), his *Journal of Speculative Theology* (1836–38), and his *Critical Exposition of the Religion of the Old Testament* (1838). To a more advanced stage belong his *Doctor Hengstenberg* (1839), and *The Evangelical Church of Prussia and Science* (1840). In the latter of these works, B. sought to prove that true philosophic union is the dissolution of the outward dogmatic church in the realm of the universal and free self-consciousness. In his *Critique of the Evangelical History of John* (Brem. 1840), and *Critique of the Evangelical Synopticists* (Leip. 1840), he attempted to show that the so-called facts of the gospel never had a historical existence, and that the four gospels were simply the product of the human self-consciousness. B. considers Strauss, a mere apologetical theologian, a comparatively orthodox writer, and regards his conclusions with the contempt of one who has reached a far higher elevation, while he conceives that his own special work in this world has been to strike off the last head of the Hydra of the Tradition-hypothesis. The attacks upon him which followed brought about a complete rupture between him and the church; the consequence of which was a brochure entitled *The Question of Liberty, and my own Private Affairs* (Zurich, 1843); and *Christianity Unveiled* (Zurich, 1843). About this time he broke with his old friends, the liberals, by writing a pamphlet against the emancipation of the Jews, *Die Judenfrage* (Brunswick, 1843), which forms the transition point to the third period of B.'s intellectual activity, in which he seems to have abandoned theology altogether, and occupied himself exclusively with literature and political philosophy. The number of his writings in this department is very great. The principal are: *History of the Politics, Civilization and Enlightenment of the 18th Century* (Charlottenburg, 1843–45); *History of Germany during the French Revolution and the Reign of Napoleon* (Charlottenburg, 1846); *History of the French Revolution until the Establishment of the Republic* (Leip. 1847); *Western Dictatorship; The Actual Position of Russia; Germany and Russia; Russia and England.* The prominent idea in all his works of this period is, that the failure of the popular and national struggles in the 19th c. results from the essential weakness of the 'enlightenment' of the 18th c. Afterward B. returned to theology. In 1850–1, appeared his *Critique of the Gospels and the History of their Origin*, and his *Critique of the Epistles of St. Paul*, the latter of which the author considers wholly apocryphal.

and written during the 2d c. B. composed various other treatises on important points of history, theology, and politics. All his writings exhibit great learning, industry, research, and acumen, yet a capacity destructive rather than constructive. His influence has largely waned.

BAUGE, *baw-jä'* [from *Baugé*, a town in France]: drugget of thick-spun thread and coarse wool, manufactured in Burgundy.

BAUGÉ, *bō-zhā':* town in the dept. Maine-et-Loire, France, 23 m. e.n.e. of Angers. The English, under the Duke of Clarence, were defeated here 1421. There are manufactures of linens and woolens. Pop. 4,000.

BAUHINIA, *baw-hĭn'ĭ-a:* genus of plants of the nat. ord. *Leguminosæ*, sub-ord. *Cæsalpineæ*. The upper petal is somewhat remote from the rest. The leaves are generally divided into two lobes. The species are natives of the warmer regions of both hemispheres, some of them remarkable for the size and beauty of their flowers. Most of them are twining plants or *lianas*, stretching from tree to tree in the tropical forests; but some are small trees, as *B. porrecta*, the Mountain Ebony of Jamaica, so called from the color of its wood. The inner bark of *B. racemosa* (the Maloo Climber), of *B. scandens*, and of *B. parviflora*, East Indian species, is employed for making ropes. *B. retusa* and *B. emarginata* also East Indian, exude a brownish colored mild gum; while the astringent bark of *B. variegata* is used in Malabar for tanning and dyeing leather, and in medicine. The leaves of various species are used in Brazil as demulcent medicines, having mucilaginous properties.—Livingstone mentions a species of B. in s. Africa, called the Mopané Tree, remarkable for the little shade which its leaves afford. They fold together, and stand nearly erect during the heat of the day. On them the larvæ of a species of *psylla* cause a saccharine secretion, in circular patches, beneath which the pupa of the insect is found. The natives scrape it off, and eat it as a dainty.

BAULITE, *baw'līt* [from Mount *Bauba*, Iceland]: mineral, a variety of Orthoclase; called also Krablite. It is a siliceous felspathic species, forming the basis of the Trachyte Pitchstone and Obsidian.

BAULK, n. *bawk* [see BALK]: a piece of foreign timber of from 8 to 16 inches square. BAWK, n. *bawk*, a cross-beam in the roof of a house uniting and supporting the rafters.

BAUM, *bowm*, L. FRANK, American playwright and writer of popular juvenile books: b. Chittenango, N. Y., 1856, May 15. Among his publications are *American Fairy Tales; Father Goose: his Book; Songs of Father Goose; The Wonderful City of Oz; Navy Alphabet* (1900); *Army Alphabet* (1900); *American Fairy Tales* (1901); *Dot and Tot of Merryland* (1901); *The Art of Decorating* (1900); *The Master Key* (1901); *The Life and Adventures of Santa Claus* (1902); *Enchanted Isle of Yew* (1903); *The Magical*

Monarch of Mo (1903); *The Marvellous Land of Oz* (1904); *The Woggle-Bug Book* (1905); *Queen Zixi of Ix* (1905); etc. His plays include *The Maid of Arran* (1881); *Matches* (1882); *Kilmorne* (1884); *The Queen of Killarney* (1885); *The Wizard of Oz* (1902); *The Woggle-Bug* (1905); etc.

BAUMBACH, *bowm'bah*, RUDOLF, German poet: b. Kranichfeld, Saxe-Meiningen, 1840, Sept. 28; d. 1905, Sept. 22. After studying natural science in Würzburg, Leipsic, Freiburg, and Heidelberg, he lived in Austria and then at Trieste, where he devoted himself exclusively to writing. In 1885 he removed to Meiningen. He most successfully cultivated the poetical tale, based upon ancient popular legends. His epics include *Zlatorg*, a Slovenic Alpine legend (1875, 37th ed. 1892); *Horand and Hilda* (1879); *Lady Fair* (1881); *The Godfather of Death* (1884); *Emperor Max and His Huntsmen* (1888). His lyric collections are *Songs of a Traveling Journeyman* (1878); *Minstrel's Songs* (1882); *From the Highway* (1882); *Traveling Songs from the Alps* (1883); *Adventures and Pranks Imitated from Old Masters* (1883); *Jug and Ink-Stand* (1887); *Thuringian Songs* (1891). He has also published some excellent prose: *False Gold* (1878), a historical romance of the 17th century; *Summer Legends* (1881), a book of fairy tales; and *Once upon a Time* (1889).

BAUMÉ, *bō-mā'*, ANTOINE, distinguished French chemist and pharmaceutist: b. Senlis, 1728, Feb. 26; d. 1804, Oct. 15. He obtained the professorship of chemistry in the College of Pharmacy at Paris about 1752, was admitted a member of the Academy of Sciences, chiefly in return for some excellent memorials communicated to that body; wrote *Elements of Theoretical and Practical Pharmacy*, which went through nine editions in France, and was translated into most European languages, and contributed by his discoveries to numerous important improvements in the arts, particularly in the manufacture of sal ammoniac, soap, and porcelain, in gilding, and the bleaching of silk. His name is familiar from the areometer which he invented, and which is still in use.

BAUMGARTEN, *bowm'gar-tén*, ALEXANDER GOTTLIEB: 1714, July 17—1762, May 26; b. Berlin, Prussia, a clean and acute thinker of the school of Wolf. He studied at Halle, and in 1740 became prof. of philosophy at Frankford-on-the-Oder, where he died. He is generally regarded as the founder of modern Æsthetics (q.v.) as a systematic science of the beautiful. In his philosophy, rational knowledge is contrasted with the imperfect knowledge gained through the senses. On the analogy of logic, the science of rational operations, he proposed æsthetics, a science of the good in sense experience. This became a science of the beautiful. This idea appears first in his treatise, *De Nonnullis ad Poema Pertinentibus* (Halle, 1735). In 1750–58, he issued two vols. of his *Æsthetica*, but his death interrupted the work. His writings in other departments of philosophy are

marked by clearness and precision; his *Metaphysica* (Halle, 1739; 7th ad. 1779) is one of the most useful books for the study of Wolfian philosophy. See Joh. Schmidt's *Leibnitz und B.* (Halle, 1874).

BAUMGARTEN-CRUSIUS, Ludwig Friedrich Otto: 1788–1843, May 31, b. Merseburg: German theologian. He studied theology at Leipsic; in 1810 became univ. preacher, and 1817 was appointed prof. of theology at Jena. B. was always a champion of religious liberty, on behalf of which he wrote various treatises. In 1820 appeared his *Introduction to the Study of Dogmatics* (Leip. 1820), a work of considerable originality and richness of thought. More complete exhibitions of his opinions are to be found in his *Manual of Christian Ethics* (Leip. 1827); *Outlines of Biblical Theology* (Jena, 1828); and *Outlines of Protestant Dogmatics* (Jena, 1830). In 1831–2, he published a *Text-book of the History of Doctrines;* in 1834, a work on *Schleiermacher, his Method of Thought and his Value;* also *Considerations on Certain Writings of Lamennais.* After his death, Kimmel published the whole of his exegetical prelections on the Gospels and Pauline Epistles.

B. was conspicuous for the breadth and solidity of his learning, the originality of his spirit, and the acuteness of his understanding, but was nevertheless deficient in clear and vivid expression. He attached himself to no school theological or philosophical. He had early been greatly influenced by the metaphysics of Schelling, from which he ultimately freed himself. His thinking was, to a certain extent, rationalistic, but on the whole approached more closely to that of the spiritual Schleiermacher.

BAUMGARTNER, *bowm'gart-ner*, Andreas Ritter von, or Chevalier de: 1793, Nov. 23—1865; b. Friedberg, Bohemia. He studied at Vienna, where, 1823, he became prof. of natural philosophy, giving also popular lectures on Sundays upon mechanics, etc., for artisans and operatives. A result of these lectures was his *Mechanik in ihrer Anwendung auf Künste und Gewerbe* (2d ed. Vienna, 1823), and his *Naturlehre* (Vienna, 1823). Resigning his professorship because of an ailment of the throat, his scientific attainments were used in various offices under the government; and after the events of 1848, March, he was minister of mines and of public buildings, and chief of one of the departments in the ministry of finance. In 1851, May, he was appointed minister of commerce, trade, and public buildings. At the same time, he was appointed pres. of the Austrian Acad. of Sciences, of which he had been vice-pres. for a number of years. He published, 1862, *Chemie und Geschichte der Himmelskörper nach der Spectralianalyse;* in 1864, *Die mechan. Theorie der Warme;* see *Freiherr von B., Eine Lebensskizze* by Schrötter.

BAUPET'TAH: town of British India, presidency of Madras, 29 m. from Guntoor. Pop. supposed abt. 20,000.

BAUR, *bow'ėr*, Ferdinand Christian: 1792, June 21—1860, Dec.: founder of the 'New Tübingen School of

Theology.' In 1817, he became prof. in the seminary of Blaubeuren, where he gave the first indications of his remarkable abilities by the publication of his *Symbolism and Mythology, or the Nature-religion of the Ancients* (Stuttgart, 3 vols. 1824–5), a work which indicates the influence of Schleiermacher over the author. In 1826, he was called to Tübingen, where he held the chair of Protestant theology. His whole life was given to religious studies—the history of doctrines, the symbolism of the church, and biblical exegesis. On account of the universality of his culture, the wonderful activity and fertility of his mind, his rare combination of speculative thought with solid knowledge, and that faculty of historic divination, or insight, which enabled him to draw decisive results from separate, obscure, and neglected *data*—he has been regarded by many in Germany as the most massive theological intellect since Schleiermacher. Unlike Bruno Bauer, he made comparatively little use of the Hegelian philosophy in his writings; and when he did, it was professedly only that he might more clearly understand historical phenomena in their internal spiritual connection, and be enabled to represent the logical process of their development. His method of investigating the progressive history of religious opinion, however, incurred the reproach of formalism from its adversaries, who said that he applied it too rigorously, and made dogmas develop themselves with a kind of abstract inevitable regularity from previous historical conditions, without allowing for immediate and extraordinary providences. His most important works in the history of doctrines are—*Die christliche Gnosis oder die christliche Religionsphilosophie* (Tübingen, 1835), (The Christian Gnosis, or the Christian Philosophy of Religion); a work which makes the Christian Gnosis of the 2d and 3d centuries the starting-point of a long series of religio-philosophical productions traceable uninterruptedly down through middle-age mysticism and theosophy to Schelling, Hegel, and Schleiermacher; *Die christliche Lehre von der Versöhnung* (Tübingen, 1838), (The Christian Doctrine of the Atonement); and *Die christliche Lehre von der Dreieinigkeit und Menschwerdung Gottes* (Tübingen, 1841–43), (The Christian Doctrine of the Trinity and the Incarnation). In reply to Möhler, the celebrated Rom. Cath. theologian, who had attacked the Prot. Church, he wrote *Der Gegensatz des Catholicismus und Protestantismus* (Tübingen 1836), (The Opposition between Catholicism and Protestantism). Besides these works, based on a historical treatment of religion, to which class also belongs his *Lehrbuch der christlichen Dogmengeschichte* (Compendium of the History of Christian Dogmas) (Stuttgart, 1847), he published various critical treatises on parts of the New Testament; such as *Die Christuspartei in der Korinthischen Gemeinde; der Gegensatz des Paulinischen und Petrinischen Christenthums; der Apostel Petrus in Rom* (1831), (The Christ-party in the Corinthian Community; the Opposition of the Pauline and Petrine Christianity; the Apostle Peter in Rome), a work in

which the author endeavors to demonstrate the existence of deep-rooted differences in that sphere of primitive Christianity, in which we are accustomed to see nothing but unity and harmony. His inquiries concerning the Gnosis led him to study minutely the pastoral epistles, the result of which study was *Die sogenannten Pastoralbriefe des Apostels Paulus* (Stuttgart, 1835), (The So-called Pastoral Epistles of the Apostle Paul), in which he combats the idea that St. Paul was their author, and refers them to the 2d c. Of a similar nature in his *Paulus, der Apostel Jesu Christi* (Stuttgart, 1845), (Paul, the Apostle of Jesus Christ). His work on the Gospel of John produced a startling effect, as up to B.'s time that gospel had generally been held prior in date to the three synoptic gospels, whereas B. strove hard to show that it was of post-apostolic origin. In 1847, appeared his *Kritische Untersuchungen über die canonischen Evangelien, ihr Verhältniss zu einander, ihren Ursprung und Charakter* (Critical Inquiry Concerning the Canonical Gospels; their Relation to each other, their Origin and Character). In 1851, he published *Das Markus-evangelium nach seinem Ursprung und Charakter* (The Origin and Character of St. Mark's Gospel). B. maintained that we must extend our notions of the time within which the canonical writings were composed to a period considerably post-apostolic, and which can only be determined approximately by a careful investigation of the motives which apparently actuated their authors. B. and his followers held that the New Testament books represent various stages in the approximation of two great Christian parties, Petrine and Pauline, at first directly hostile to one another. The most distinguished adherents of this 'Tübingen School' of German theology are Zeller, Schwegler, and Hilgenfeld. B. is still admired for his learning; but his theories no longer hold their former power even in Germany.

BAUSEANT, n. *baw'sĕ-ant*, or BEAUSEANT, *bō'sĕ-ant* [F. *beau*, well; *seant*, sitting]: banner borne by the Knights Templars in the 13th c. It was of cloth, striped black and white; or, in heraldic language, sable and argent; the Templars' battle-cry.

BAUSSET, *bō-sā'*, LOUIS FRANÇOIS, Cardinal: 1748–1824; b. Pondicherry, India. His father, who held an important position in the French Indies, sent the young B. to France when he was but 12 years of age. He was educated by the Jesuits, and became Bishop of Alais 1784. Having signed the protest of the French bishops against the civil constitution of the clergy, he emigrated (1791); but in the following year he returned to France. He was soon arrested, and imprisoned in the old convent of Port Royal, where he remained until after the fall of Robespierre. After the restoration of Louis XVIII. in 1815, he entered the chamber of peers; the following year he became a member of the French Acad.; and in 1817 he received the appointment of cardinal. He wrote the history of Fénelon (1808–9, 3 vols.),

at the request of the abbé Emery, who had in his possession the manuscripts of the illustrious Abp. of Cambray. The work had great success; and its author was awarded, 1810, the second decennial price of the Institute, for the best biography. His history of Bossuet (1814) was less favorably received.

BAUTAIN, *bō-tăn*, LOUISE-EUGENE-MARIE: 1796, Feb. 17—1867; b. Paris: French philosopher and theologian. He studied under Cousin at the Normal School. In 1816, he was appointed prof. of philosophy in the College of Strasbourg, where the youth carried their admiration of him even to the length of imitating his walk and dress. The religious tendencies of his character did not find satisfactory expression in philosophy, and he became a priest, 1828. After the events of 1830, he resigned his professorship; but his reputation for orthodoxy, never very strong, had been destroyed in the eyes of his bishop by his work *La Morale de l' Évangile comparée la Morale des Philosophes*, published a few years before, and he was in consequence suspended from sacred offices for several years, though reinstated 1841. In 1838, he was made dean of the Faculty of Letters at Strasbourg, and afterwards director of the College of Juilly. Still later, he was translated to Paris, and appointed vicar-gen. of the metropolitan diocese. In 1848, he attempted to give a religious direction to the revolution. He was selected as one of the professors of the Theological Faculty of Paris, and was an extremely popular preacher. His principal works are the following: *Psychologie Expérimentale* (1839); *Philosophie Morale* (1842); *Philosophie du Christianisme* (1835); *La Religion et la Liberté considérées dans leurs Rapports* (1848), *La Morale de l' Évangile comparée aux divers Systèmes de Morale* (1855).

BAUTER, n. *baw'tėr* [etym. doubtful]: to become hardened.

BAUTZEN, *bowt'sėn*, or, in official language, BUDISSIN, *bō'dĭs-sĭn:* cap. of the circle of B., kingdom of Saxony. It is on rising ground overlooking the river Spree, and is the seat of the chief offices of justice in the circle. B. has several churches, a royal palace—formerly the residence of the markgrafs of Meissen—numerous schools, and two public libraries and an hospital. The chief branches of industry are manufactures of woolens, fustian, linen, hosiery, leather, and gunpowder. B. is a place of considerable antiquity, and was known in the time of Henry I. (931), but was made a town first under Otho I. Its several privileges, and the reputation of certain holy relics preserved in St. Peter's Church, made the place important. It suffered greatly in the war with the Hussites, and still more during the Thirty Years' War. Meissner, the poet (died 1805), was born here. B. is celebrated chiefly as the place where Napoleon, with an army of 150,000 men, won a barren victory over 90,000 of the allied Russians and Prussians, after an obstinate resistance, 1813, May 20–21. The allies lost in the two days 15,000 in killed and wounded;

in addition to 1,500 prisoners, mostly wounded, which the French captured. The French left 5,000 dead upon the field, and upwards of 20,000 were wounded. The result of the battle, and the splendid retreat of the allies, were most disheartening to the French army, and even to Napoleon himself. Pop. of B. (1900), 26,000, including many Wends, descendants of the old Vandals.

BAUXITE: mineral, white to red, spongy, clay-like aluminum ferric hydroxid; principal source of aluminum and very light in weight. Deposits found in Saline and Pulaski cos., Ark., are more than 40 ft. thick. B. has been derived chiefly from French mines.

BAUZA, *bow'thâ*, Don Felipe: about 1750–1833: Spanish geographer, who at the age of 20 years, accompanied Malaspina in his naval inspections; and, on his return, became director of the hydrographic depot at Madrid. The fine maps of South America drawn under his careful supervision are superior to all that had preceded. In 1823, when political events compelled him to leave Spain, he betook himself to England.

BAVALITE, *bâ'va-līt:* mineral, oölitic in structure classed near Chamoisite (sub-species of Thuringite); an aluminum and iron silicate, of greenish black, bluish, or gray color, forming beds in schistose rocks in Brittany.

BAVARIA, *ba-vā'rĭ-a* (Ger. Baiern, and officially, Bayern): one of the states of the German empire; according to its size, the second in importance. B. is divided into two unequal parts, which are separated by the Baden and Hesse-Darmstadt dominions. The e. portion, comprising fully eleven-twelfths of the whole, is situated between lat. 47° 20′ and 50° 41′ n., and long. 9° and 13° 48′ e. It is bounded n. by the Prussian province of Hesse-Nassau, the Thuringian principalities, and the kingdom of Saxony; e., by Bohemia and Austria; s., by the Tyrol; and w., by Würtemberg, Baden, and the Grand Duchy of Hesse, The w. part, occupying the Rhine Palatinate, on the left bank of the Rhine, lies between lat. 48° 57′ and 49° 50′ n., and between 7° 5′ and 8° 27′ e. Rhenish Prussia, the Grand Duchy of Hesse, and Baden bound it on the w., n., and e., and France on the south.

B. is divided into 8 districts, as follows:

Districts.	Area: Eng. sq. m.	Pop. 1900.	Pop. per sq. m. 1900.
Upper Bavaria	6,456	1,323,888	205.0
Lower Bavaria	4,152	678,192	163.3
Palatinate	2,288	831,678	363.5
Upper Palatinate	3,728	553,841	148.6
Upper Franconia	2,702	608,116	225.1
Middle Franconia	2,925	815,895	278.9
Lower Franconia	3,243	650,766	200.7
Swabia	3,792	713,681	188.2
Total	29,286	6,176,057	210.9

Surface, Hydrography, Railways, etc.—B. is a mountainous country. It is walled in on the s.e., n.e., and n.w. by mountains ranging from 3,000 ft. to 10,000 ft. in height.

CASTLE OF NEU SCHWANSTEIN, BAVARIA.

The highest elevation is reached on the s., the Zugspitz of the Noric Alps being 10,394 ft. high. On the e., the highest points of the Böhmerwald, dividing B. from Bohemia, are the Arber and Rachelberg, respectively 4,613 ft. and 4,800 ft. high. On the n.e., the Schneeberg, in the Fichtelgebirge range, has a height of 3,481 ft. A branch of this chain, which is connected on the n.w. with the Thuringerwald, extends s. between the rivers Regnitz and Vils. The Rhöngebirge, the greatest height of which is 3,000 ft., forms the northernmost chain of Bavaria. In the Rhine Palatinate, the principal mountain is the Hardt, whose culminating peak is about 2,300 ft. high. In the interior, B. is intersected in several directions by various less elevated ranges, alternating with extensive plains and fertile valleys. B. is rich in wood, nearly one-third of its surface being covered with forests, mostly of pine and fir.

As to its *hydrography*, B. has the Rhine flowing along the whole e. boundary of the circle of the Palatinate, which is also watered by the Speyer, the Lauter, and the Queich. The Danube enters B. proper at Ulm, where it is joined by the Iller, and pursues its course e.n.e. through the centre of the country, until it passes out at Passau, into the Austrian dominions. Including its windings, the length of the Danube in B. is about 270 m., navigable throughout. In its passage through B., it receives no fewer than 38 rivers, the chief of which, on the right bank, are, besides the Iller, already mentioned, the Lech, the Isar, and the Inn; and on the left, the Wörnitz, the Altmühl, the Kocher, the Naab, the Regen, and the Ilz. The n. part of B. is in the basin of the Main, which, rising in the n., flows with many windings through the kingdoms, s. w. to the Rhine, with which it unites at Mayence. Its most important tributaries are the Regnitz, the Rodach, the Tauber, and the Saale. B. has several lakes, the principal of which are the Chiem, circumference of 35 m.; the Wurm, length 14 m., breadth 4 m.; and the Ammer, circuit 27 m. These lakes are in the s., at the foot of the n. slope of the Noric Alps. A corner of Lake Constance also belongs to Bavaria. The lakes and rivers abound in fish. There are a few canals in the country, the most important of which is the *Ludwigs-Kanal*, which, taking advantage of the rivers Main, Regnitz, and Altmühl, unites the Rhine and Danube, and through them the German Ocean with the Black Sea. This canal was executed by government at a cost of upwards of $4,000,000. B. has altogether over 4,000 m. of railway in operation. One of the chief is that between Augsburg and Lindau on Lake Constance, 80 m. These lines join Munich with Augsburg, Donauwörth, Nürnberg, Bamberg, Ulm, Kufstein, etc. B. has about 9,000 m. of public roads, and over 5,300 m. of telegraphs.

Climate, Soil, Products, etc.—The temperature of B. varies considerably, being cold and bleak in the mountainous regions and very hot in summer in the plains and valleys. The climate generally, however, is mild and salubrious. The soil, particularly in the valleys of the Upper and Lower

Danube, is very fertile, second to none in central Germany; but its capabilities as yet have not been fully developed, although now a spirit of agricultural enterprise pervades the kingdom, improved methods of cultivation have been introduced, and large tracts of waste land have been reclaimed and brought under the plow. The plain south of Munich has been described as the granary of Germany, in consequence of its great productiveness, while the circles of Upper and Middle Franconia are styled the hop-garden of Bavaria. Wheat, rye, oats, and barley are chief articles of produce, but buckwheat, maize, and rice also are grown to a small extent. The vine, as well as the hop-plant, is cultivated extensively in Franconia, and the wine is held in great esteem. Rhenish B. also produces good wine. Fruit, tobacco, flax, hemp, linseed, licorice, and beet-root are cultivated. Cattle-rearing is the exclusive occupation of the inhabitants on the slopes and at the foot of the Alps, pasturage being found at an elevation of 8,500 ft. Sheep, goats, and pigs are reared in Middle and Upper Franconia, and horses chiefly in Upper B. and Swabia, but the live-stock is far from adequate to the extent and capacity of the country. The forests of B. annually furnish much timber. The soil is rich in mineral wealth, which as yet has not been drawn upon to anything like its full extent. The chief minerals are salt—which is a government monopoly, and obtained by evaporation, principally from the rich mines in the s.e. corner of the Alps—coal, and iron, which is worked almost everywhere throughout the territory. In Rhenish B., copper, manganese, mercury, and cobalt are found; quick-silver and black-lead are obtained in some places; marble in great variety is common, also gypsum, alabaster, and some of the finest porcelain clay in Europe.

Manufactures, etc.—The manufacturing industry of B., like its agriculture, is generally undeveloped, and not centred in the hands of capitalists, who can largely take advantage of new inventions to prosecute it with energy and success, but distributed among numerous small manufacturers.

This is not the case with beer, the manufacture of which is carried to great perfection in B., and to an extent, if we take population into account, quite unparalleled in Europe. There are upwards of 7,000 breweries in B., making about 260 million gallons of beer annually, most of which is consumed in the country, though it is exported, also, to all parts of Germany, and even as far as America and India. Nearly two-thirds of the revenue of the state are said to be derived from this source alone. Next to beer, coarse linen is the most important product of manufacturing industry, and of late years some considerable cotton-factories have been erected; but the supply of cotton, woolen, and worsted goods is not equal to the home consumption. Leather is extensively manufactured, also paper, articles of straw and wood, porcelain, glass, nails, needles, jewelry, beet-root sugar, and tobacco. The mathematical and optical instru-

ments of Munich are held in high repute. The exports consist of timber, grain, wine, cattle, wool, salt, hops, fruits, beer, leather, glass, jewelry, optical and mathematical instruments, butter, cheese, etc. Principal imports are sugar, coffee, woolens, silks, stuffs, drugs, hemp and flax. The position of B. gives it the transit trade between n. Germany and Austria, Switzerland and Italy.

Population, Religion, Education.—The growth of the population of B. is much checked by the regulations which relate to marriages. No marriage can take place until the authorities who superintend the relief of the poor are fully satisfied that the persons wishing to marry have adequate means to support a wife and family; and certain military obligations have also to be fulfilled before a man can enter into wedlock. These restrictive laws have another consequence besides that of preventing a rapid increase of population; they have tended to increase inordinately the number of illegitimate children. B. has a very bad pre-eminence in this respect on the continent. Pop. (1817) 3,564,757; (1833) 4,187, 390; (1855) 4,541,556. During recent years the increase has been more rapid. Pop. (1864) amounting to 4,807,440; (1871) 4,863,450; (1905) 6,524,372. The Bavarians, notwithstanding their beer bibbing propensity, are essentially a sober and industrious people. Though all of German origin, they differ materially in character. The Franconians are intelligent, diligent, and steady; the Swabians, good-naturedly indolent; and the inhabitants of the Palatinate, lively and enterprising; while the Bavarians proper are dull and superstitious.

As to *religion:* The state maintains perfect toleration, guaranteeing the same civil rights to Rom. Catholic and Protestant alike. Individuals of every sect have the privilege of worshipping privately without fear of molestation; and on application to the king by a sufficient number of families, the right of public worship can be secured. A concordat with Rome divides the state into 2 archbishoprics and 6 bishoprics. The consistories of Anspach, Baireuth, and Speyer, under the superior consistory of Munich, govern the Lutheran Church, the Munich consistory being in some degree subject to a section in the home department, which manages the temporal concerns of all the churches. The president of the Munich consistory has a seat and vote in the council of the state. The revenues of the Church of Rome are derived from lands and endowments; the Protestant Church is supported by the state. The govt. of B. for a time greatly favored the Old-Catholic Church, to the prejudice of the Ultramontanes. There were in B. (1900) 5,430 Old-Catholics.

B. has a good system of *education,* under the supreme direction of a minister of public instruction, to whom certain members of the provincial governments, specially instructed to watch the educational interests of the communities, are subordinate. These have numerous inspectors under them, who make systematic reports. Neverthe-

less, in Upper and Lower B., about one-fifth of the children are yet without school education. Besides elementary schools, there are numerous *gymnasia*, and Realschulen and technical schools of various kinds. The three Bavarian universities are at Munich, Würzburg, and Erlangen, the latter being Protestant. There are several extensive libraries in B., that of Munich being the largest in Germany. Art has been zealously cultivated in B., and since the days of King Louis I. has been peculiarly fostered by the state. There are numerous institutions for the futherance of painting, sculpture, and music.

Government, Revenue, etc.—B. is a constitutional monarchy, the throne hereditary in the male line. Its constitution dates no further back than 1818, when it was declared a part of confederated Germany. The king is the executive. The legislature consists of a chamber of senators, and one of deputies. The senators are hereditary, the king, however, having the power, within certain limits, to nominate members for life. The senate or chamber of Reichsräthe (councilors of the empire) consists of 18 princes of royal family, 2 crown dignitaries, 2 archbishops, the heads of 20 noble families, 27 other hereditary Reichsräthe, and 17 members appointed for life by the crown. The life members cannot exceed one-third the hereditary members. The lower house consists of 150 representatives (1 to every 31,500 population) chosen indirectly; electors or Wahlmänner being elected by the people (1 to each 500 pop.), and these electors choose the representatives. In the event of there not being a dissolution, the chamber lasts for six years. The usual length of the annual session is two months. The chambers, in ordinary circumstances, meet once a year for the dispatch of business, and it is compulsory on the king to summon them once in three years. No deliberation can take place unless two-thirds of the deputies are present. All matters relating to public burdens, etc., come first under the consideration of the chamber of deputies; with reference to other questions, the king exercises his own discretion as to which chamber shall first discuss them. No alteration in taxation, and no new law, can be promulgated without the consent of the legislature; but the royal prerogative is loosely defined.

The cabinet consists of seven members, chiefs of the departments of foreign affairs, justice, home affairs, public worship, and instruction, finance, commerce, and public works and war. They are not necessarily members of the chambers, though they are privileged to be present at the deliberations. The privy council is composed of the king, certain royal princes, the ministers of state, and six councilors nominated by the king.

Since the accession of King Otto, 1886, a regent, Prince Luitpold, and aides, has administered the kingdom. The interest on the native debt swallows up about 15 per cent. of the whole expenditure; the army, 18 per cent., and worship and education about 11 per cent. The revenue of

Bavaria for 1904–5 was estimated at 473,050,948 marks, and the expenditures for the year at the same figures. The public debt, 1908, was 1,985,002,700 marks; of this total, 1,551,419,480 marks is railway debt.

The raising of the *army* of B. was in 1871 adapted to the Prussian method of conscription. Every Bavarian is liable to service for seven years, and no substitution is allowed. The period of active service is four years, the remaining three being spent in the army of reserve; and the soldier, after quitting the reserve, is bound to serve other five years in the landwehr. When B., 1870, Nov., became one of the kingdoms of the German empire, her army, on the established conditions of its formation, was formed into two corps of the imperial army, each consisting of two divisions, under the command of the king of B. in time of peace, but controlled by the emperor of Germany in war. On the peace-footing, the infantry consists of 1,372 officers and 41,526 men; cavalry, 274 officers, 7,413 men; artillery, 453 officers, 9,548 men; total, all branches, 2,769 officers, 64,542 men. The Bavarian arm troops form the first, second, and third Bavarian army corps. In time of war, the total force is about 280,000 men.

History.—The Boii, a race of Celtic origin, were the first inhabitants of B. of whom tradition furnishes any account. From them, its German name, Baiern, as well as its old Latin name, Boiaria, is said to have been derived. They appear to have conquered the country about B.C. 600, and they retained it until shortly before the Christian era, when they were subjugated by the Romans; the country being made an integral part of the Roman empire, under the names of Vindelicia and Noricum. After the decay of the Roman power, the Ostrogoths and Franks successively held possession of it, until Charlemagne conquered it. After his death, it was governed by lieutenants of the Frank and German kings, until 1070, when it passed into possession of the Guelph family; and it was transferred by imperial grant, in 1180, to Otho, Count of Wittelsbach, whose descendant now occupies the throne. The Rhenish Palatinate was conferred on this family by the emperor Frederick III., 1216. Now followed quarrels between relatives, and divisions of territory, until the dukedom of B. was severed from the Rhenish and Upper Palatinates (see PALATINATE); of the latter, however, it repossessed itself, 1621—the peace of Westphalia, 1648, confirming the title of its princes to that possession, as well as its right to the electoral dignity to which it had been raised in 1624. In the war of the Spanish Succession, B. supported France, and suffered considerably in consequence; but in 1777, on the extinction of the younger Wittelsbach line, it received the accession of the Rhine Palatinate. In 1805, B. was erected into a kingdom by Napoleon I. The king assisted Napoleon in his wars, and in consideration of his aid received large additions of territory. In 1813, however, the Bavarian king opportunely contrived to

change sides, and thus managed to have confirmed to him, by the treaties of 1814–5, an extent of territory nearly as valuable as the possessions which the treaties of Presburg and Vienna had given him, and which he had now to restore to Austria.

In 1818, the new constitution came into existence, but owing to various causes, it did not secure that measure of popular freedom and contentment that had been expected. In 1825, Louis I. ascended the throne, a well-meaning, liberal, and intellectual monarch, and favorable to the liberty of the people and the press; but he lavished the wealth of the kingdom on the extravagant embellishment of the capital, and on works of art, while he neglected works of practical value, that would have tended to enrich the country, diminish the public burdens, and increase the welfare of his people. In 1830, a wave from the French revolution swept over the country, disturbing its equanimity, but not to any serious extent. The Bavarian government, however, took alarm, and restricted the freedom of the press. These restrictions excited so much opposition, that they were soon rescinded, but new dissatisfaction was created by the imposition of new taxes. The Jesuits now obtained an immense influence with the king, which they used to the detriment of popular rights. The wrath of the people was further aroused against their monarch by his connection with the notorious Lola Montez, who was looked upon as an agent of the Ultramontanists—an imputation which that lady, in her autobiography, published 1858, indignantly repudiates, maintaining that she was the inveterate enemy of that party, and the true friend of the people. In 1848, March, following the example of the French revolutionists, the people of Munich seized the arsenal, and demanded reforms and the expulsion of Lola Montez. The king had to consent; but in the same month he abdicated his throne, in accordance, says Lola Montez, with a promise made by him to her. His son, Maximilian II., succeeded him: he died 1864. Louis II., noted for his eccentricities, ascended the throne, became insane, and drowned himself in 1886. He was succeeded by his insane brother, Otto I., under the regency of Prince Luitpold. See GERMANY.

BAVA'RIA: a colossal female statue at Munich, which bears the name of the country of which it is a personification; exceeded in size only by the statue of Liberty in New York harbor. It was erected by King Louis I., the model having been executed by Schwanthaler. Externally, the figure bears a German aspect. A long folding garment reaches from the middle to the naked foot; over the half-naked breast a skin is cast, and the hair falls freely over the back. The brow is adorned with sprigs of oak; in the left hand, which is raised, she holds a wreath of oak; and in the right, which is bent towards the breast, a sword; at her side reposes the Bavarian lion, the guardian of her kingdom, in a sitting attitude. The statue is 65 ft. high, the pedestal being 30, so that the whole monument has a

height of 95 ft. The statue was cast from the bronze of Turkish and Norwegian cannon. Internally, it is very remarkable. Through the back part of the pedestal, a door leads to a stone staircase of 60 steps. The figure itself is hollow, and resembles a mine, with side-passages which lead into the lion. A staircase of cast-iron, of 58 steps, leads through the neck up into the head, where there are two sofas, and several openings through which views may be had. At the highest part of the head there is the following inscription: 'This colossal figure, erected by Louis I., King of Bavaria, was designed and modelled by L. von Schwanthaler, and cast in bronze, in the years 1844 to 1850, by Ferdinand Miller.' The head contains standing-room for thirty-one persons. The whole figure consists of seven pieces, and the lion of five. The monument was formally uncovered, amid great rejoicings, 1850, Aug. 7.

BAVARIAN, n. *bă-vā'rĭ-ăn:* a native or inhabitant of Bavaria.

BAVAROY, n. *băv'a-roy* [F. *Bavarois,* Bavarian]: a great-coat; properly one made meet for the body; *fig.,* a disguise; anything employed to cover moral turpitude.

BAWBEE, or Babee, n. *baw'bē'* [F. *bas-billon,* base bullion or coin]: popular designation of a half-penny in Scotland, now dropping out of use. In Scottish song, B. is synonymous with a girl's fortune or marriage-portion—as, *Jenny's Bawbee.* Bawbees', n. plu. *-bēz',* money.

BAWBLE, or Bauble, n. *baw'bl* [mid. L. *baubella,* a precious thing, a jewel: F. *babiole,* a toy: compare Hung. *bub,* a bunch; *buba,* a doll]: a showy trifle; a worthless piece of finery. Baubling, a. *baw'blĭng,* showy but flimsy; contemptible.

BAWCOCK, n. *baw'kŏk* [prov. Eng. *baw,* an exclamation of ridicule or contempt; *baws,* in east of England, boys or girls]: in *OE.,* a burlesque term of endearment; a fine fellow.

BAWD, n. *bawd* [W. *baw,* dirt, filth; *bawaidd,* dirty: OF. *baude*]: one who promotes debauchery; a procuress. Bawdy, a. *baw'dĭ,* filthy; unchaste; obscene. Bawdry, n. *baw'drĭ* [OF. *bauderie*]: the practices of a bawd; obscenity. Bawdy-house, a house of ill fame.

BAWL, v. *bawl* [AS. *bau* or *bow,* the cry of a dog: Gael. *beul,* the mouth, an opening: mid. L. *baulārĕ,* to bark, to roar: Icel. *baula,* to low as an ox]: to cry out with a loud full sound; to cry out lustily. Bawl'ing, imp. Bawled, pp. *bawld.* Bawl'er, n. one who.

BAX, *băks,* Ernest Belfort, English socialist: b. Leamington, 1854, July 23. He was educated in London and Germany; followed journalism in Germany as foreign correspondent in 1880–1; and returning to England, became one of the founders of the English socialist movement. In 1885 he aided in starting the Socialist League.

He wrote a large number of works on socialistic and historical subjects, including *Jean-Paul Marat* (1878; 2d. ed. 1901); Kant's *Prolegomena*, with biography and introduction (1882); *Handbook to the History of Philosophy* (1884); *Religion of Socialism* (1886); *Ethics of Socialism* (1889); *French Revolution* (1890); *Outlooks from the New Standpoint* (1891); *The Problem of Realty* (1893); *German Society at the Close of the Middle Ages* (1891); (with Norris) *Socialism, its Growth and Outcome* (1894); *Outspoken Essays on Social Subjects* (1897); *The Peasants' War in Germany* (1899); *Rise and Fall of the Anabaptists* (1903).

BAX'TER, *băks'tĕr*, ANDREW, Scotch philosopher and metaphysician: b. Aberdeen, 1686; d. 1750. He was educated at King's College, Aberdeen, and found occupation as a private tutor. About 1733 he published an *Inquiry into the Nature of the Human Soul; Wherein the Immateriality of the Soul is Evinced from the Principles of Reason and Philosophy.* In 1741 he went abroad with two of his pupils, and remained for some years at Utrecht, where he contracted an acquaintance with some of the Dutch *literati.* He returned to Scotland in 1747, and resided at Whittingham, East Lothian, where he died. He was the author of a Latin treatise on the principles of astronomy, entitled *Matho sive Cosmotheoria, Puerilis Dialogues,* which he afterward translated into English and published in two volumes, 12mo.

BAXTER, JAMES PHINNEY, American author: b. Gorham, Me., 1831, March 23. A successful merchant and manufacturer; he has been six times mayor of Portland, Me., to which he presented the land and building for a public library. A devoted student of the history of his native state, he has published *The Trelawney Papers* (1884); *George Cleeve of Casco Bay* (1885); *The British Invasion from the North* (1887); *Journal of Lieut. W. Digby* (1888); *Sir Ferdinando Gorges and His Province of Maine* (1890); *The Pioneers of New France in New England* (1894); *The Voyages of Jacques Cartier* (1905). He edited Vols. III., IV., V., and VI. of the *Documentary History of Maine* (1889).

BAXTER, LUCY E. (BARNES), English art writer: b. Mere, Wiltshire, about 1835; d. Florence, Italy, 1902, Nov. 10. She was the daughter of William Barnes, the Dorset poet, and wrote over the pen name of LEADER SCOTT. After her marriage to Mr. S. T. Baxter in 1867, she resided in Italy, where she was made an honorary member of the Accademia delle Belle Arti. She was the author of *The Painter's Ordeal; A Nook in the Apennines* (1879); lives of Fra Bartolommeo, Andrea del Sarto, Fra Angelico, and Lucadella Robbia; *The Renaissance of Art in Italy* (1882); *Messer Agnolo's Household, a Unique Cento Florentine Story* (1882); *Ghiberbi and Donatello* (1882); *A Bunch of Berries* (1883); *Sculpture, Renaissance and Modern* (1886); *Tuscan Studies and Sketches* (1887); *Life of William Barnes* (1888); *Vincigliata and Mariano* (1891);

The Orti Orcellari (1893); *Echoes of Old Florence* (1894); *The Castle of Vincigliata* (1897); *The Cathedral Builders*, her most important work (1899); *Filippo di Ser Brunellesco* (1901).

BAXTER, *baks'tėr*, RICHARD: 1615, Nov. 12—1691, Dec. 8; b. Rowton, Shropshire: one of the most eminent of the Nonconformist divines in England. His early education was somewhat neglected. Instead of attending, as he wished, one of the universities, he was obliged to content himself with a course of private study, in the midst of which he was induced, remarkably, for he was habitually serious, to try his fortune at court, fortified with an introduction to the Master of the Revels. A month sufficed to convince him that he was out of his element at Whitehall, and a protracted illness after his return helped to deepen the earnestness of his religious convictions. Soon afterwards, at the age of 23, he was ordained, and entered on the mastership of Dudley Grammar School, from which he removed to act as assistant to clergyman at Bridgenorth, where he resided nearly two years. In 1640, he was invited to become parish clergyman of Kidderminster, an offer which he accepted; and within a comparatively brief period, not only did he establish his reputation as one of the most remarkable preachers of the time, but succeeded in effecting a wonderful improvement among his people. On the breaking out of the civil war, his position become peculiar. Sincerely attached to monarchy, his religious sympathies were almost wholly with the Puritans; and though a Presbyterian in principle, he was far from admitting the unlawfulness of episcopacy. His views, which, some time before the Restoration, became extremely popular, were too catholic for the general taste, and the open respect shown by Baxter to some leading Puritans exposed him to some danger from the mob. He accordingly retired to Coventry, where he ministered for two years to the garrison and inhabitants. He afterwards accepted the office of chaplain to Colonel Whalley's regiment, and was even present at the sieges of Bridgewater, Exter, Bristol, and Worcester. His influence was at all times exerted to modify the intolerance of partisanship, and to promote 'the spirit of love and of a sound mind.' On the urgent invitation of his parishioners, he returned to Kidderminster, when ill health forced him to leave the army, and continued to labor there for some time. During this period, he greatly extended his fame by the publication of his *Saints' Rest* and *Call to the Unconverted*. He never dissembled his sentiments with regard to the execution of the death-sentence on the king and the accession to power of Cromwell, even in the presence of the Protector himself, who endeavored, without success, to enlarge his ideas on the subject of revolutions. On the return of Charles, B. was appointed one of his chaplains, and took a leading part in the conference held at the Savoy to attempt a reconciliation between the contending church factions, a project defeated by the bigoted obstinacy of the bishops.

B. was tempted with the offer of the see of Hereford, but declined the honor, praying instead to be permitted to return to his beloved flock at Kidderminster. He asked no salary, but his request was refused. The Act of Uniformity at length drove him out of the English Church. and in 1663, July, he retired to Acton, Middlesex, where he spent the greater part of nine years, occupied chiefly in authorship. He produced his books with a rapidity unparalleled in modern generations, at least in this one respect, that the quality was not always in the inverse ratio of the quantity. The Act of Indulgence, 1672, permitted him to return to London, where he divided his time between preaching and writing. At length, 1685, he fell into the brutal clutches of Judge Jeffreys, who condemned him, for alleged 'sedition' in his *Paraphrase of the New Testament*, to pay a fine of 500 marks, and in default, to lie in the King's Bench Prison till it was paid. The circumstances of the trial are graphically described by Macaulay in the second volume of his History. After a confinement of nearly eighteen months, B. was released and pardoned, on the mediation of Lord Powis. Afterwards he saw better times, and died in the 75th year of his age.

B. is said to have preached more sermons, engaged in more controversies, and written more books than any other Nonconformist of his age; and Dr. Isaac Barrow has said of him, that 'his practical writings were never mended, and his controversial seldom confuted.' The total number of his publications exceeded 160. Of these, by far the most popular and celebrated are his *Saints' Rest, Dying Thoughts* and *Call to the Unconverted*—20,000 copies of which last were sold in a twelvemonth, and it was translated into all European languages. More important, however, in a theological point of view, are his *Methodus Theologiæ* and *Catholic Theology*, in which his peculiar system—a compromise between Arminius and Calvin—is embodied. His autobiographical narrative is historically valuable; the review of his religious opinions is spoken of by Coleridge as one of the most remarkable pieces of writings in religious literature. A complete edition of his works, in 25 vols., with a life by Orme, was published 1830. His Practical Works, in 4 vols., were published 1847. See Dean Boyle's *Richard Baxter* (London, 1883).

BAXTERIANS, *băks-tē'rĭ-anz:* adherents to Baxter's theological system, the peculiar doctrines of which were 1st, That though Christ died in a special sense for the elect, yet he died also in a general sense for all; 2d, The rejection of the dogma of reprobation; 3d, That it is possible even for saints to fall away from saving grace. The tendency of Baxter's views was towards theology more liberal than Calvinism; and though deficient in logical consistency, they have been, and still are, popular in England, especially among the dissenters—who shrink from the hard conclusions of Calvinism, or the latitudinarian views of Arminianism. The two most eminent of the earlier B. are Dr. Isaac Watts and Dr. Philip Doddridge.

BAY, a. *bā* [L. *badĭŭs*, brown: Sp. *bayo:* It. *bajo:* F. *bai*]: brown or reddish; inclining to a chestnut color. BAYARD, n. *bā'ârd* [F. *bai*, a chestnut-brown: Dut. *paard*, a horse]: a bay horse; *fig.*, a man blinded with self-conceit; an unmannerly beholder. ADJ. blind; stupid. A BAYARD, a knight without fear or reproach, after the famous chevalier of that name. QUEEN'S BAYS, 2d Dragoon Guards, so named from their bay horses.

BAY, n. *bā* [Sp. *bahia*—from prov. Sp. *badar*, to open, to gape: It. *baja:* F. *baie*—from mid. L. *baia*, a bay]: an arm of the sea bending into the land; state of being hemmed in; a pond head raised to keep a store of waterfor driving a mill; in *arch.*, term used to signify the magnitude of a building. 'If a barn consist of a floor and two heads, where they lay corn they call it a barn of two *bays*. These bays are from 14 to 20 ft. long, and floors from 10 to 12 broad and usually 20 ft. long, which is the breadth of the barn.' BAY WINDOW, a window that projects outwards, forming a kind of bay within. BAY-SALT, a sort of coarse salt, formed by the solar evaporation of sea-water; extensively obtained from salt marshes along the coast of France. See SALT.

BAY, n. *bā* [It. *abbaire;* F. *abbayer;* L. *baubārī*, to bow-wow as a dog F. *aboi*, barking, baying]: the bark of a dog when his prey is brought to a stand. AT BAY, brought to a stand, and turned to keep the enemy in check; hard pressed; at one's wits' end; a stag is *at bay* when he is made to turn and face his pursuers: V. to bark, as a dog at his game; to keep an enemy from closing in. BAY'ING, imp. BAYED, pp. *bād*.

BAY: an indentation of the sea into the land, with an opening wider than the inland extension. A gulf is of greater extension inland than a B., and has often a narrow opening. These terms are often loosely applied; Baffin's Bay, e.g., is really a gulf. When the body of water is large, and the entrance narrow, it becomes a shut sea, as the Baltic, the Red Sea, etc. Hudson's Bay, the Persian Gulf, and the Gulf of Mexico, might with propriety be termed seas.

BAY, n. *bā* [F. *baie*, a berry—from L. *bacca*, a berry: Sp. *baya*, the cod of peas, a husk]: name given to a number of trees and shrubs more or less resembling the Laurel or Victor's Laurel (*Laurus nobilis*), which is also called SWEET BAY (see LAUREL); the name *Baye*, which was once exclusively applied to the fruit, having been extended to the whole plant. The Common Laurel or Cherry Laurel (*Prunus Laurocerasus*) is sometimes called BAY LAUREL. See LAUREL.—The RED BAY of the southern states of America is *Persea Caroliniensis*. See LAUREL.—The SWEET BAY of America is *Magnolia glauca* (see MAGNOLIA), and the LOBLOLLY BAY of the same country is *Gordonia Lasianthus*. See GORDONIA. BAYS, n. plu. *bāz*, an honorary garland or crown of victory, especially for fame in poetry—originally made of laurel branches with its

berries. From early times, bay-leaves have been associated with popular superstitions and usages. With other evergreens, they have adorned houses and churches at Christmas; and in token of rejoicing or of some meritorious deed, sprigs of bay, as well as of laurel, have been worn in the hat, or wreathed around the head. There appears to have been a notion that the B. was an antidote against the effects of thunder. In an old play, *The White Devil,* Cornelia says:

> 'Reach the bays:
> I'll tie a garland here about his head,
> 'Twill keep my boy from lightning.'

According to Shakespeare, the withering of bay-trees was reckoned an omen of death. Thus, *Richard II:*

> ' 'Tis thought the king is dead; we will not stay.
> The bay-trees in our country all are wither'd.'

The following passage occurs in *Parkinson's Garden of Flowers,* 1629, p. 598: 'The bay leaves are necessary both for evil uses and for physic, both for the sick and for the sound, both for the living and the dead. It serveth to adorn the house of God, as well as man; to crowne or enriche, as with a garland, the heads of the living; and to strike and decke forth the bodies of the dead; so that from the cradle to the grave, we have still use of it, we have still need of it.' Bay-leaves are sometimes used in cookery for flavoring.

BA'YA (*Ploceus Philippinus*): small East Indian bird, of the great family of the *Fringillidæ* (q. v.), and of a genus to some of which, from their remarkable manner of constructing their nests, the name Weaver Bird (q.v.) is often given. It is described by the older ornithologists under the name of the Philippine Grossbeak, or *Loxia Philippina.* It is yellow, spotted with brown, the throat black, the beak conical and large. Its nest is very curious. Suspended from a slender twig of a lofty branch, so that monkeys, squirrels, and serpents may not reach it, it is rendered still more secure by its form, which is very like that of a common Florence flask, the entrance, however, being from beneath, and not from above, with lateral openings to separate chambers, in one of which the female sits upon the eggs, while another is occupied by the male, who there pours forth his song. It is composed of fine fibres of leaves and grass. The B. is very easily tamed, will perch on the hand, and can be trained to fetch and carry at command.

BAYADERES, *bā-ya-dērz'* [from the Portuguese *bailadeira,* that is, dancing girl]: European name for the dancing-girls and singers in India, who are divided into two great classes, each comprising many subdivisions. The first of these classes, who are called Devadasi—that is, slaves to the gods—are divided into two distinct grades, according to the rank of the families whence they have sprung, the dignity of the idol to which they are devoted, and the authority and riches of the temple to which they belong. Those of the first rank are chosen from the most

influential families of the Vaisya caste, to which the rich landed proprietors and merchants belong. Those of the second class are chosen from the chief Sudra families, who correspond to mechanics. No girls can be admitted among the Devadasis but such as are still in childhood, and free from any bodily defect. The parents of the girl must renounce by a solemn agreement all right to their child, who then receives the necessary instruction. The employment of the Devadasis is to sing the praises of their god at festivals and solemn processions, to celebrate his victories and great deeds, and to dance before him, to weave the wreaths with which the images are adorned, and in general to perform subordinate offices in the temple and for the priests. On the other hand, they are excluded from the celebration of such rites and ceremonies as are accounted peculiarly sacred, as, for example, at sacrifices for the dead, suttis, etc. The Devadasis of the first rank live within the enclosure of the temple, which they are not permitted to leave without the special permission of the high priest. They must remain unmarried for life, but are, notwithstanding, permitted to choose a lover, either in or out the temple, provided he belongs to one of the high castes. A connection with a man of low rank would be punished with the utmost severity. If they have children the girls are brought up to their mother's profession, and the boys are educated for musicians. The Devadasis of the second rank differ but little from those of the first, but they have more freedom, as they live without the temple. A certain number of them must attend daily at the temple service, but at public processions they are all obliged to appear. They not only dance and sing before the images—for which they receive a fixed allowance of rice-money—but when summoned by the nobles, they perform at marriages, banquets, etc. All the Devadasis reverence, as their special patroness and protectress, the goddess Rambha, one of the most beautiful dancers in the paradise of Indra.

BAYAMO, *bâ-yâ'mō*, or San Salvador: town in the e. part of the island of Cuba, 60 m. n.w. from Santiago; in an unhealthful plain, near the left bank of the Canto, a small river which falls into an arm of the sea called the Canal of Bayamo. The town has considerable trade. Pop. abt. 7,500.

BAYARD: see under Bay 1.

BAYARD, *bī'ärd*, George Dashiell, American soldier: b. Seneca Falls, N. Y., 1835, Dec. 18; d. 1862, Dec. 14. Passing his boyhood in Iowa, he entered West Point, 1852, and became a cavalry lieutenant; then captain in August, 1861, colonel of volunteers in September, brigadier-general the following April; and after serving in the Shenandoah and northern Virginia campaigns, was mortally wounded at Fredericksburg.

BAYARD, James Asheton (1st), American statesman: b. Philadelphia, 1767, July 28; d. 1815, Aug. 6. He was the

son of Dr. James A.; was adopted by his uncle, Col. John (q.v.), graduated at Princeton, 1784; studied law, and settled in Wilmington, Del., permanently. In 1796 he was elected (Federalist) Representative in Congress and became leader of the party in the House, noted as a constitutional lawyer; and when the peculiar system of presidential elections at that time had tied Jefferson and Burr for the presidency, though Jefferson was the only one really voted for, Bayard threw his vote for Jefferson and elected him as the less obnoxious of the two. John Adams appointed him minister to France, but he declined. He served in the House till 1803; in 1804 he was elected to the Senate, and held the seat till 1813, voting against the War of 1812. He was made peace commissioner in 1813 by Madison, and, declining the ministry to Russia, was one of those who concluded the Treaty of Ghent, December, 1814, but died shortly after his return.

BAYARD, James Asheton (2d), American statesman, son of the foregoing: b. Wilmington, Del., 1799, Nov. 15; d. there 1880, June 13. He became a lawyer of high rank in Wilmington, United States attorney for Delaware under Van Buren, and was elected United States senator, 1851, 1857, and 1863, as a Democrat; but on the last occasion the 'iron-clad' oath of allegiance being required of public officers at that time, Mr. Bayard entered a protest against it as a violation of State rights, and resigned his seat at once on taking it. His successor, George R. Riddle (q.v.), dying four years later after the war, he accepted an election to fill out his own unexpired term, to March, 1869; during most of the time was chairman of the Judiciary Committee, and gained an honorable celebrity for his punctilious sense of public honor in the matter of the Credit Mobilier (q.v.). His son, Thomas F. (q.v.), was chosen to succeed him by the same legislature which had elected himself, the only instance of the kind in American history. He lived quietly at Wilmington during the remainder of his life.

BAYARD, John, American patriot: b. Bohemia Manor, Md., 1738, Aug. 11; d. 1807, Jan. 7. He was a prominent Philadelphia merchant, member of the Sons of Liberty, and later of the Provincial Congress, 1774–5, and of the Council of Safety; colonel of infantry at the battles of Brandywine, Germantown, and Princeton; member of the State board of war, and speaker of its House. He furnished arms to Congress and fitted one of the earliest efficient privateers. In 1785 he was elected to Congress. Somewhat impoverished by his sacrifices in the Revolution, he removed permanently to New Brunswick, N. J., where he was mayor, county judge, and leading magnate. He was a firm Federalist, of high character.

BAYARD, Nicholas, American colonial official: b. Alphen, Holland, about 1644; d. New York, 1707. He was double nephew of Peter Stuyvesant, by blood and marriage; became his private secretary and surveyor of the

province, secretary of it after the English conquest, and mayor in 1685. He was commander-in-chief of the militia of the province, and one of the three resident councilors; and had to flee to Albany for his life on Leisler's usurpation after Andros' overthrow, but was made councilor anew on Leisler's downfall. On Kidd's arrest for piracy in 1699, Bayard, like all Gov. Bellomont's officials, was accused of complicity, and visited London to clear himself; but the old hates of the Leisler time pursued him, and on charge of attempting to introduce popery, piracy, and slavery into New York he was condemned to death for high treason. William's death intervening, however, he was released and restored to his possessions by an order in council.

BAYARD, *bā'ärd*, PIERRE DU TERRAIL, Chevalier: 1476–1524, Apr. 30; b. Castle Bayard, near Grenoble: the knight *sans peur et sans reproce;* perhaps the only hero of the middle ages who deserved the unmingled praise and admiration bestowed upon him. Simple, modest, a sterling friend and tender lover, pious, humane, magnanimous, he held in rare symmetry the whole circle of the virtues. After acting as page to the Duke of Savoy, B. entered the service of Charles VIII., whom he accompanied to Italy, and gained renown in the battle of Verona, where he took a standard from the enemy. At the beginning of the reign of Louis XII., B. was engaged in a battle near Milan, where he followed the defeated and retreating forces with such impetuosity that he entered the city with them, and was made a prisoner, but the Duke Ludovico Sforza released him without ransom. At Barletta, 1502, B., with ten other French cavaliers, fought a tournament with an equal number of Spaniards, in order to decide their respective claims to superiority; and although seven Frenchmen were overthrown in the first charge, the result, chiefly through B.'s bravery, after a six hours' combat, was declared equal. Next, he is found fighting bravely in Spain, and against the Genoese and Venetians. When Pope Julius II. declared war against France, B. hastened to support the Duke of Ferrara; but failed in his scheme for making the pope a prisoner. Subsequently, he won fresh laurels in Spain. In the war with Henry VIII. of England—who had threatened Picardy, and besieged Terouane, 1513—when the French, on one occasion, were about to lay down their arms, B. made a sudden attack on an English officer, and, pointing his sword at his breast, said: 'Surrender, or I take your life.' The Englishman gave his sword to B., who returned his own, saying: 'I am Bayard, your prisoner; and you are mine.' The emperor and the king of England exchanged their prisoners without any demand of ransom for Bayard. When Francis I. had ascended the throne, B. was sent into Dauphiné to make a way for the army over the Alps and through Piedmont. In this expedition, he made Prosper Colonna a prisoner. Next, B. gained, at Marignano, a victory for the king, who, in consequence, submitted to receive

the honor of knighthood from Bayard. When Charles V. broke into Champagne, at the head of a large army, B. defended Mezieres against all assaults, and on his entry into Paris he was hailed as the savior of his country, was made knight of the order of St. Michael, and appointed over a company of 100 men, led in his own name, an honor which until then had been confined to princes of the blood-royal. He was slain by an arrow from an arquebuss, while crossing the Sesia, and so highly was he esteemed for all noble qualities, that his death was lamented not only by the French king and nation, but also by his enemies. His love of virtue, especially of that kingliest of virtues, *justice*, was so passionate, that he was wont to declare that all empires, kingdoms, and provinces where justice did not rule, were mere forests filled with brigands. His body was taken by the enemy, but was restored to France, and interred in the church of the Minorites' monastery, near Grenoble.

BAYARD, Thomas Francis: b. 1828, Oct. 29; received his early education at the Flushing School, under management of its founder, A. L. Hawks, D.D. Designing to follow the vocation of merchant his course of study was at first in view of a mercantile life, but he afterwards turned to the study of law. In 1851, he was admitted to the bar of the state of Delaware, and began practice at Wilmington. In 1855, he removed to Philadelphia, but returned to Wilmington after two years. He had already been appointed U. S. dist. attorney for Delaware in 1853, but had resigned the office at the end of a year. In 1869, he succeeded his father in the U. S. senate; was re-elected 1875, and again 1881. In 1876 he was a member of the Electoral College, and in 1880 a prominent candidate for the presidency, receiving 153 votes on the first ballot of the democratic national convention. Mr. B. was secretary of state 1885–89; ambassador to England 1893–97. He died 1898, Sept. 28.

BAYAZID, or Bayezeed, *bī-a-zēd′:* fortified town of Turkish Armenia, about 150 m. e.s.e. of Ezeroum, and about 15 m. s.w. of the foot of Mt. Ararat. Pop. prior to 1830, about 15,000; in recent years, abt. 5,000, mostly Kurds.

BAYAZID′ I.: see Bajazet.

BAY′BERRY, or Candleberry, or Candleberry Myrtle, or Wax Tree, or Wax Myrtle, or Tallow Tree (*Myrica cerifera*): small tree or shrub, 4–8 feet high, but generally a low, spreading shrub; native of the United States, but most abundant and luxuriant in the southern states. It belongs to the nat. ord. *Amentaceæ*, sub-order *Myriceæ*, according to some a distinct nat. ord., distinguished by naked flowers, with 1-celled ovary, a drupaceous fruit (stone-fruit)—the scales becoming fleshy—and a single erect seed. The genus *Myrica* has male and female flowers on separate plants; and the scales of the catkin in both male and female flowers are concave. The C. has evergreen oblongo-lanceolate leaves, with two small serratures on each side of the point, sprinkled with resin-

ous dots. The bark and leaves when bruised emit a delightful fragrance. The drupes—popularly called berries—are about the size of peppercorns, and when ripe are covered with a greenish-white wax, which is collected by boiling them and skimming it off, and is afterwards melted and refined. A bushel of berries will yield four or five pounds. It is used chiefly for candles, which burn slowly with little smoke, and emit an agreeable balsamic odor, but do not give a strong light. An excellent scented soap is made from it.—*M. Gale* is the SWEET GALE of the moors and bogs of Scotland, well known for its delightful fragrance, native of the whole northern parts of the world. Several species are found at the Cape of Good Hope; one of which, *M. cordifolia*, bears the name of WAX SHRUB, and candles are made from its berries.

BAY CITY: the county seat of Bay co., Mich., on the right bank of and 4 m. n. of the Saginaw river. Four important lines of railroad connect with the city, which is located 108 m. n.w. of Detroit. It is the principal market town for a large area of the Saginaw Valley and 'Thumb' region of the lower Michigan peninsula. This peninsula is considered to be, agriculturally, the 'State Garden.' The Saginaw river is navigable for the largest lake vessels up to this point. West Bay City is directly opposite Bay City, on the n. bank of the Saginaw.

Bay City is a leading manufacturing centre of the state. The principal industries are coal, salt, lumber, sugar, alcohol, beer, machinery and chemistry. It has the only alcohol plant in the state which produces proof alcohol from the refuse molasses. There are, at Bay City, and vicinity one of the world's largest chemical plants and three large beet-sugar factories. Much activity prevails in the coal mining territory through the adjacent Saginaw Valley. About 150,000,000 ft. of rough lumber imported annually from Canada, Upper Michigan, and Lake Superior districts are registered at Bay City as a port of entry. Many planing mills, box factories and sawmills are kept going continually. The total annual business of the city aggregates $50,000,000, including all lumber industries, manufacturing and produce supplies and groceries. The street railways cover an extended area reaching to all suburbs. The city hall is a fine structure, costing $200,000. There are several banks and loan companies with large capital. Churches, charities and the press are well represented. The city boasts of numerous big buildings, parks and spacious thoroughfares. Pop. (1910) 45,166.

BAYER, *bi'ėr*, ANTON: German dramatic composer and conductor; b. 1785 in Bohemia. After a course of study in Prague under Volger and Von Weber, he was orchestral conductor of German and Czech popular opera 1802–05; then gave piano and flute performances in Germany, France, and Italy. Later he was prof. at the Conservatorium, Prague. Some of his comic operettas and many of his instrumental compositions were very popular.

BAYER, August von: architectural painter: 1803, May 3—1875, Feb. 2; b. Rorschach, on Lake Constance. After studying architecture, he turned 1828 to painting, in Munich, and later in Carlsruhe. His favorite subjects were grand mediæval structures, and the interiors of great public halls and churches. B. was court painter of Baden.

BAYER, Johann: a German constructor of charts of the stars; b. either at Augsburg or at Ehain, Bavaria, in the latter part of the 16th c. He was a zealous Prot. pastor. He is now remembered only for his *Unanometria* (1603, and 2d ed. 1639), in which he gave 51 maps of the heavens, constructed from the observations of his predecessors, and followed by explanations in his *Explicatio Caracterum Æneis Tabulis Insculptorum* (Stras. 1624). Although his maps are not remarkable for accuracy, even for his time, he has the merit of introducing the simple plan of distinguishing the stars of a constellation by means of letters.

Bayeux Tapestry.
Harold coming to anchor on the cost of Normandy.

The largest star of the constellation he named by the first letter of the Greek alphabet (α), and the rest in the order of their apparent brilliancy, by the following letters. This convenient plan is still followed.

BAYEUX TAPESTRY, *bâ-yĕh′:* a web of canvas or linen cloth, 231 ft. long by 20 inches wide, preserved in the public library, Bayeux, upon which is embroidered, in woolen thread of various colors, a representation of the invasion and conquest of England by the Normans. Tradition asserts it to be the work of Matilda, wife of William the Conqueror, and it is believed that if she did not actually stitch the whole of it with her own hand, she at least took part in, and directed the execution of it by her maids; and afterwards presented it to the cathedral of Bayeux, as a token of her appreciation of the effective assistance which its bishop, Odo, rendered to her husband at the battle of Hastings. Some antiquaries contend that it was the work not of Queen Matilda (the wife of the

Conqueror), who died 1083, but of the Empress Matilda (the daughter of King Henry I.), who died 1167. The tapestry is divided into 72 distinct compartments, each representing one particular historical occurrence, and bearing an explanatory Latin inscription. A tree is usually chosen to divide the principal events from each other. This pictorial history—for so it may be called, and indeed, in several particulars, it is more minute than any written history extant—opens with Harold, prior to his departure for Normandy, taking leave of Edward the Confessor. Harold is next observed, accompanied by his attendants, riding to Bosham with his hawk and hounds; and he is afterwards seen, successively, embarking from the Sussex coast; anchoring in France and being made prisoner by Guy, Earl of Ponthieu; redeemed by William, Duke of Normandy, and meeting with him at his court; assisting

Bayeux Tapestry.
The crown offered to Harold by the people.

him against Conan, Earl of Bretagne; swearing on the sacred relics never to interfere with William's succession to the Saxon throne, etc.; and finally re-embarking for England. The tapestry then represents Harold narrating the events of his journey to Edward the Confessor, whose death and funeral obsequies we next see. Harold then receives the crown from the Saxon people, and ascends the throne; and next we have the news brought to William, who takes counsel with his half-brother, Odo, Bp. of Bayeux, as to the invasion of England. Then follow representations of the active war-preparations of the Normans; their embarkation; disembarkation; march to Hastings, and formation of a camp there; the battle, and death of Harold, with which the tapestry finishes.

The B. T. gives an exact and minute portraiture of the manners and customs of the times; and it has been remarked that the arms and habits of the Normans are identical with

those of the Danes, as they appear in the miniature paintings of a manuscript of the time of King Cnut, preserved in the British Museum.

M. Lancelot appears to have been the first to direct attention to the existence of this curious monument, by a description of an illuminated drawing of a portion of it which he had discovered, in a paper presented to the Acad. of Inscriptions and Belles-Lettres, 1724. This led to the discovery of the tapestry itself, in the Bayeux Cathedral, by Père Montfaucon, who published an engraving of it, 1730, with a commentary on the Latin inscriptions. In 1767, Dr. Ducarel gave an account of it in his *Anglo-Norman Antiquities.* From that time until 1803, when Napoleon had it conveyed to Paris, the B. T. excited little attention. Its exhibition, however, in the National Museum there awakened public curiosity concerning it, and gave rise to various speculations as to its age, intention, etc. The discussion satisfactorily established it to be what tradition asserted it—a contemporary pictorial record of the events of the Norman Conquest. The Soc. of Antiquaries (London) published an engraving of the whole in the sixth vol. of the *Vetusta Monumenta.* The B. T. would have been destroyed at the Revolution, had not a priest fortunately succeeded in concealing it from the mob, who demanded it to cover the guns. It was formerly preserved in the cathedral of Bayeux, where it was wont to be exhibited, on certain days of the year, in the nave of the church, round which it exactly went. See Bruce's *Bayeux Tapestry Elucidated* (London, 1855); and Fowke's *Bayeux Tapestry, reproduced in Autotype Plates* (Arundel Soc. 1875).

Bayeux Tapestry.—Battle of Hastings.

BAY ISLANDS: a small group in the Bay of Honduras, 150 m. s.e. of Balize. The cluster was proclaimed a

British colony 1852, but was ceded to the republic of Honduras 1859. The chief islands are Ruatan (q.v.), and Guanaja, whence Columbus first sighted the mainland of America.—Total pop., 5,000.

BAYLE, *bāl*, PIERRE: 1647–1706, Dec. 28; b. Carlat, in the old co. of Foix, France: one of the most independent thinkers in the 17th c. He studied philosophy under the Jesuits at Toulouse. The arguments of his tutors, but especially his friendly intercourse and quiet disputation with a Catholic clergyman in his neighborhood, led him to doubt the orthodoxy of Protestantism, and shortly prevailed so far that he openly renounced his father's creed, and adopted the Rom. Catholic. In the course of about 17 months, however, the conversation of his relatives brought him back to the Prot. profession. To escape ecclesiastical censure, he went to Geneva, thence to Coppet, where he studied the philosophy of Descartes. After a few years, he returned to France, and in 1675 was elected to fill the chair of philosophy in the Univ. of Sedan. In this office he remained until 1681, when the university was disfranchised. His next appointment was that of prof. of philosophy at Rotterdam. The appearance of a comet in 1680 having given occasion to a widely spread alarm, B., 1682, published his *Pensées Diverses sur la Comète*, a work full of learning, and treating, in discursive style, many topics of metaphysics, ethics, theology, history, and politics. This was followed by his *Critique Générale de 'l'Histoire du Calvinisme de Maimbourg.'* In 1684, he commenced a periodical, *Nouvelles de la République des Lettres.* The religious persecutions in France gave B. occasion to write his *Commentaire Philosophique sur ces Paroles de l'Evangile: 'Contrains les d'entrer,'* which professed to be a translation from the English, and contained a strong defense of the principle of toleration. In consequence of the accusations brought forward by the theologian, Jurieu, who regarded B. as an agent of France, and the enemy of Protestants, B., though he skilfully defended himself, was deprived of his license to teach (in 1693). He now assiduously devoted his leisure to the *Dictionnaire Historique et Critique* (1st ed., 2 vols. Rotterd., 1696—last edition, 16 vols., Paris, 1820). This was the first work published under his own name. Again Jurieu came forward as B.'s adversary, and induced the consistory of Rotterdam to censure the Dictionary, chiefly on account of the supposed irreligious tendency of the article on 'David,' and the commendation bestowed on the moral character of certain atheists. B. promised to expunge all the objectionable matter; but afterwards, when he found that the public entertained a different and more favorable opinion of the peculiar passages than the Rotterdam consistory, he judged it best to allow them to remain as they were, or made only slight alterations. New opponents were called into the arena by his *Réponse aux Questions d'un Provincial*, and the continuation of his *Pensées sur la Comète.* Jacquelot and Leclerc now attacked his religious opinions, while others persecuted him as the enemy of Protestantism and of his adopted country, Holland. These literary and theological

controversies had a bad effect on his failing health, and a disease, for which he refused to employ medical aid, proved fatal.

B. stands among the leaders of modern skeptics and logicians. Accustomed to view every question scrupulously on all sides, he was apparently led to doubt on religious matters generally; at least, it is not to be denied that his skepticism carried him the length of doubting the worth or the wisdom of the religious dogmatism that ruled both Roman Catholics and Protestants in his day. B. was thus the antithesis of a bigot, but his hostility to bigotry originated rather in his indifference to the doctrines about which theologians quarrelled, than in any clear or high perception of the iniquity of religious persecution. With great eloquence and persistency, he vindicated the doctrine that moral characteristics and convictions may exist and flourish independently of particular religious opinions; and considering the barbarous manner in which the rival churches in B.'s time sought to enforce conformity of sentiment, and crush the liberty of private judgment, it is not to be wondered at that this doctrine, however objectionable abstractly, should have found wide acceptance in Europe. Voltaire calls him 'a more admirable logician than a profound philosopher,' and adds that 'he knew almost nothing of physics.' This probably means no more than that he was ignorant of the then recent discoveries of Newton; for the scientific articles in the Dictionary presuppose a knowledge of the theories of Descartes (q.v.), with which he was conversant enough. The style of B. is clear and natural, but diffuse, and often impure. The articles in the Dictionary seem to have been chosen merely as vehicles to introduce numerous digressions in notes, many of which are prolix and uninteresting; but the greater number of the articles are characterized by good sense, logic, critical acumen, and great learning. Though it is impossible to detect the presence of a religious or a philosophical system in the work, it everywhere gives indications of the high intelligence, honest principle, and universal knowledge of the author. It was proscribed both in France and Holland, and was consequently very widely diffused in both countries, and has exercised an immense influence over the literature and philosophy of the continent. It was the dawn of skepticism in the 18th c., and may be historically regarded as the protest of the enlightened human intellect against the irrational dogmatism of the churches. In his personal character, B. was amiable, obliging, disinterested, and modest, but at the same time morally courageous and independent. His *Œuvres Diverses* were published in four vols. at the Hague, 1725–31.

BAYLEN, *bī-lĕn′:* town in the province of Jaen (Andalusia), Spain; 22 m. n.n.e. of Jaen. It has manufactures of linen, glass, bricks tiles, soap, etc. B. is celebrated as the place where the Spaniards won their only victory over the French (1808, July) more by accident, and the errors of the

French commander, Dupont, than by generalship. About 18,000 French soldiers laid down their arms at B., the only condition being that they should be sent to France; and other detachments of French troops afterwards offered their submission. The Spaniards, however, basely broke faith with them, and sent them to the hulks at Cadiz. The capitulation had the worst effect on the French arms. Joseph Bonaparte at once fled from Madrid, and Napoleon could find no words strong enough to express his indignation at the folly and pusillanimity of the surrender. Pop. 10,000.

BAYLEY, James Roosevelt, D.D., Roman Cath. abp.: 1814, Aug. 23—1877, Oct. 3; b. New York. He graduated at Trinity Coll., Hartford, Conn., 1835; studied medicine one year, but having decided to enter the ministry of the Prot. Episc. Church, began the study of theol. He was rector of a church in Harlem, N. Y., 1840–1, but then resigned and visited Europe. He joined the Rom. Cath. Church while abroad, and 1842 entered the theol. sem. of St. Sulpice, Paris. He was ordained priest 1844, and for 2 years was prof. in St. John's Coll., Fordham. He then became pastor of a country church, and incidentally performed the duty of chaplain in the ship-fever hospital at the New York quarantine station. B. was then recalled to the city, and till 1853 was sec. to Abp. Hughes, besides doing pastoral work. He was consecrated bp. of Newark, N. J., 1853; founded Seton Hall Coll. 1853, and established there a theol. sem. 1856. He attended the council of the Vatican 1869–70; 1872 he was promoted to the archiepiscopal see of Baltimore.

BAYLEY, *bā'lĭ*, Richard, American physician: b. Fairfield, Conn., 1745; d. Staten Island, N. Y., 1801, Aug. 17. After studying medicine in England, chiefly in the London hospitals and under Dr. Hunter, he returned to America in 1776 as a surgeon in Gen. Howe's army, but settled in New York the following year. He was the first professor of anatomy in Columbia College (1792), and for a time health officer of the port of New York, where his vigorous advocacy of proper quarantine laws was finally successful. A careful student of his profession, he suggested a new method of treatment for croup, and maintained (1797) that in its origin, yellow fever was due to local causes and was not contagious. He published: *Cases of the Angina Tracheatis, with the Mode of Cure* (1781); *Essay on the Yellow Fever* (1797); *Letters on Yellow Fever* (1798).

BAYLEY, William Shirley, American geologist: b. Baltimore, Md., 1861, Nov. 10. He graduated at Johns Hopkins in 1883, and since 1887 has been assistant geologist of the Lake Superior division of the United States Geological Survey, and since 1886 associate editor of the 'American Naturalist.' He is the author (with Prof. C. R. Van Hise) of the *Report on the Geology of the Marquette Iron District of Michigan* and has been a fre-

quent contributor to scientific journals. He is professor of geology at Colby College.

BAYLIES, *bā'lĭz*, Francis, American statesman, member of Congress from Massachusetts for several sessions: b. 1784, d. Taunton, Mass., 1852, Oct. 28. In the presidential contest which finally resulted in the election of John Q. Adams, he threw the only electoral vote for Jackson that was given from New England. He was for a short time minister to Brazil. He published in 1828 a history of the old colony of Plymouth.

BAYLISS, *bā'lĭs*, Clara Kern, American author: b. near Kalamazoo, Mich., 1848, March 5. She was married to Alfred Bayliss in 1871, and has published *In Brook and Bayou* (1897); *Lolami, the Little Cliff Dweller* (1901); *Lolami in Tusayan* (1903); *The Evolution of a Boy* (1905); *Two Little Algonkin Lads* (1905).

BAYLISS, Jeremiah Henry, American Methodist Episcopal clergyman: b. Wednesbury, England, 1835, Dec. 20; d. Bay View, Mich., 1889, Aug. 14. He was educated at Genesee College, N. Y., and was prominent as pastor of Park Avenue and Trinity churches, Chicago; Roberti Park and Trinity churches, Indianapolis; Central Church, Detroit; and Walnut Hills Church, Cincinnati. He edited the *Western Christian Advocate* in 1884 and 1888.

BAYLISS, Sir Wyke, English artist: b. Madeley, 1835, Oct. 21; d. London, 1906, April 5. He was educated at the Royal Academy, and was president of the Royal Society of British Artists from 1888. His paintings include *La Sainte Chapelle* (1865); *St. Mark's, Venice* (1880); *St. Peter's, Rome* (1888); *The Cathedral Amiens* (1900); *The Golden Duomo, Pisa* (1892), etc. His publications include *The Witness of Art* (1876); *The Enchanted Island* (1888); *The Likeness of Christ Rex Regum* (1898); *Five Great Painters of the Victorian Era* (1902).

BAYLOR, *bā'lŏr*, Frances Courtenay, author: b. Fayetteville, Ark., 1848, Jan. 20. She became known by her publications in periodicals, chiefly short stories. In 1865–67 and 1873–4, she resided in England, where she gathered much material, of which she made excellent use. Two of her short stories had great popular success: these were *The Perfect Treasure* and *On This Side*, presenting respectively the British and the American social characteristics. *On Both Sides* (1886); *Claudia Hyde* (1894); *The Ladder of Fortune; The Shocking Example and Other Sketches; Behind the Blue Ridge; Juan and Juanita* (1897); *A Georgian Bungalow; Nina Barrow; Featherlings of Ferneyhaugh*, etc., are among her later works.

BAYLOR, George, revolutionary officer: 1752, Jan. 12—1784, Mar.; b. Newmarket, Va. He served in the Revolutionary army from the beginning, being appointed 1775, Aug. 15, aide-de-camp to Gen. Washington. After the surprise and defeat of the Hessians at Trenton,

N. J., he was promoted 1777, Jan. 8, col. of dragoons. He met disaster 1778, Sep. 17, when the small force in his command was surprised near Tappan and nearly annihilated, Col. B. being wounded and captured. When released, he again entered the colonial service, and remained until the close of the war.

BAYLOR, Robert Emmett Bledsoe, American lawyer: b. Lincoln co., Ky., 1793, May 10; d. Gay Hill, Tex., 1874, Jan. 6. In the War of 1812 he served under Col. Boswell and took part in the engagement near Fort Meigs. Admitted to the bar in Kentucky, he later removed to Alabama (1820), acquired a large practice, and became prominent in politics, being a representative in Congress, 1829–31. Later he emigrated to Texas, then a republic, and was a district judge for 25 years. A loyal member of the Baptist denomination, he gave largely in money and land to establishing one of its colleges at Independence (1845), and in recognition of his munificence it was named Baylor University (q. v.).

BAYLOR UNIVERSITY: institution of learning under Bapt. auspices, at Waco, Tex., named from Robert E. B. Baylor, ll.d. (1793–1874), member of congress from Ala., afterward a judge in Tex. It was chartered 1845, at Independence, Tex.; its course was enlarged 1851, by its pres., Rufus C. Burleson, d.d., ll.d., who, with the faculty, resigned 1861 and established Waco Univ. at Waco; and in 1882 the two were combined as the B. U., at Waco. It has good buildings and a library of 17,812 vols. The institution is open to both sexes. Besides the usual college course, it offers a school of oratory, school of music, school of art, school of physical culture, and a commercial coll. There are also a primary dept. and a preparatory dept. Profs. and teachers (1910) 54; total students, 1,296; value of grounds and buildings, $200,000.

BAYLY, *bā'lĭ*, Ada Ellen, a popular English novelist, best known as Edna Lyall: b. Brighton, about 1859; d. Eastbourne, 1903, Feb. 9. She wrote *Won by Waiting* (1879); *Donovan* (1882); *We Two* (1884); *In the Golden Days* (1885); *Knight Errant* (1887); *Autobiography of a Slander* (1887); *Derrick Vaughan, Novelist* (1889); *A Hardy Norseman* (1889); *Doreen* (1894); *How the Children Raised the Wind* (1895); *Autobiography of a Truth* (1896); *Wayfaring Men* (1897); *Hope the Hermit* (1898); *In Spite of All* (1901); *The Hinderers* (1902), etc. Although her novels are decidedly romantic, their aim is to depict the development of character.

BAYLY, Thomas Haynes, English song-writer and author: b. Bath, England, 1777, Oct. 13; d. London, 1839, April 22. He began the study of law under his father, and later went to St. Mary Hall, Oxford, in order to prepare for the Church; but abandoned both and devoted himself to literature. He gained great popularity with some songs, and several dramas and novels by him also hit the public taste. With Henry Bishop he published *Melodies*

of Various Nations. Among his songs some of the best known are: *I'd Be a Butterfly; The Soldier's Tear; We Met —'twas in a Crowd;* and *She Wore a Wreath of Roses.* His best play is *Perfection;* among his novels are *The Aylmers;* and *A Legend of Killarney. Loves of the Butterflies* and *Songs of the Old Château,* are volumes of songs and ballads; and his other works include *Kindness in Women,* a collection of tales; *Parliamentary Letters and Other Poems,* and *Rough Sketches of Bath.*

BAYLY, Thomas Henry, American statesman: b. Accomac co., Va., 1810; d. 1856, June 22. He was admitted to the bar in 1830, and was for several years a member of the General Assembly of his State. In 1842 he was elected judge of the circuit superior court of law, an office which he resigned in 1844, when elected a representative in the national Congress; and by successive re-elections he held the latter position till his death. As chairman of the Committee on Ways and Means, he was the leader of the house during many sessions, and was highly respected by men of all parties, as well for his urbanity and dignity as for his ability.

BAYNE, *bān,* Peter, ll.d.: essayist and biographer: 1830, Oct. 19—1895, Feb. 10; b. Ross-shire, Scotland. He graduated at Marischal Coll., Aberdeen, and was successively editor of journals in Glasgow, Edinburgh, and London. From 1870 he was one of the editors of the *Christian World,* London. A collection of his biographical essays was pub. 1855, entitled *The Christian Life in the Present Time,* and later appeared the treatise, *The Testimony of Christ to Christianity.* He published *Life and Letters of Hugh Miller* (1871); *Chief Actors in the Puritan Revolution* (1878); and a new *Life of Martin Luther* (1887).

BAYNES, *bānz,* Thomas Spencer, ll.d.: logician: 1823 —1887, May 30; b. Wellington, Somersetshire, Eng. He graduated at the Univ. of Edinburgh, and 1851–55 was assist. to Sir William Hamilton there; was on the staff of the London *Daily News* 1857–64, prof. of logic, rhetoric, and metaphysics in the Univ. of St. Andrews 1864–87. B. was editor-in-chief of the 9th ed. of the *Encyclopædia Britannica,* for which he wrote the title *Shakespeare.* He published a translation of the *Port Royal Logic* (1851); *New Analytic of Logical Forms* (1852).

BAY OF ISLANDS: on the e. coast of the northernmost portion of the North Island of New Zealand.

BAYONET, n. *bā'ŏn-ĕt* [from *Bayonne,* in France, where first made: F. *baïonnette*]: a dagger or small spear fixed at the end of a musket or similar weapon. The first bayonets, used in France 1671, called *bayonets-à-manche,* had handles which fitted into the muzzle of the guns; but at a later date were introduced the *bayonets-à-douille,* or socket-bayonets, having a socket which enabled the B. so to be used as not to interrupt the firing. The use of pikes went out when that of bayonets came in. It seems probable that the first B. was a dagger, which the musketeer stuck

by its handle into the muzzle of his weapon, as defense against a cavalry charge; and that the usefulness of the contrivance suggested a permanent arrangement. Opinions as to the present utility of bayonets differ widely, many authorities considering them of little importance, while others assert just the contrary. While the result of a battle is often determined by the employment of smokeless powder and long-range and rapid-firing rifles in surprises and night attacks the bayonet may be used to advantage as was frequently proved in the Boer war (1889-1902). BAYONET, v. to stab or kill with a bayonet; to compel by hostile exhibition of the bayonet. BAY'ONETING, imp. BAY'ONETED, pp.

BAYONET-CLASP: movable ring of metal surrounding the socket of a bayonet to strengthen it. BAYONET CLUTCH, a clutch, usually with two prongs, attached by a feather-key to shaft-driving machinery. When in gear, the prongs of the clutch are made to act upon the ends of a friction-strap in contact with the side-boss of the wheel to be driven. BAYONET-JOINT, kind of coupling, the two pieces of which are so interlocked by the turning of the complex apparatus that they cannot be disengaged by a longitudinal movement.

BAYONNE, *bā-yon'*: a city of N. J., s. of Jersey City, separated from it by the Morris canal, and from Staten Island by the Kill von Kull. It comprises what were formerly the villages of Salterville (Pamrapo), Bayonne, Centreville, and Bergen Point, each having its railway station on the Central railroad of New Jersey, which runs through the city along the New York Bay shore. B. is about 6 m. s.w. of New York, to and from which frequent trains run daily each way. It contains numerous churches, excellent public schools, printing offices, petroleum refineries, with extensive pipe-line connections, chemical and color works. The Port Johnson coal docks, on the Kill von Kull, near Bergen Point station, employ several hundred hands in receiving and shipping coal. Pop. (1885) 13,080; (1890) 19,033; (1900) 32,722; (1910) 55,545.

BAYONNE, *bā-yŏn'*: one of the most strongly fortified towns of France, dept. of the Basses-Pyrénées, at the confluence of the Adour and Nive, about 3 m. from the mouth of their united waters in the Bay of Biscay. These rivers divide the town into three parts—Great and Little B., and the suburb of St. Esprit. B. is a handsome town, beautifully situated at the foot of the Pyrenees. It has extensive ship-yards, rope-walks, glass-manufactories, sugar-refineries, and distilleries, and a brisk export trade in hams (for which it is famous), chocolate, liqueurs, timber, tar, and cork. Chief imports are wool, olive-oil, and licorice. The bayonet was invented here about 1670. It is the see of a bishop, has a cathedral, a mint, and schools of commerce and navigation. B. is historically interesting. It is said that here Catherine de Medici and the Duke of Alba

planned the massacre of the Huguenots on St. Bartholomew's Day, 1572. Here Napoleon cozened Charles IV. out of the crown of Spain, after he had ineffectually endeavored to get Ferdinand VII., to whom Charles had previously resigned it, to give it up. The forcing of the passage of the Nive, immediately in this vicinity, by the British, 1813, Dec., occasioned some of the most bloody conflicts of the Peninsular campaign. The place was invested by the British early in the following year, and a sally from it by the French, Apr. 14, was repulsed after great loss on the side of the British. Pop. abt. 27,000.

BAYOU, n. *bī'ô* [F. *boyau*, a bowel, a gut]: a channel for water; the outlet of a lake or side outlet of a river—used in the s.w. United States.

BAY-RUM: aromatic spirituous liquid, used by hair dressers and perfumers, prepared in the West Indies by distilling rum in which leaves of *Myrcia acris*, or other species of the genus (family *Myrtaceæ*) have been steeped. It is difficult to obtain genuine B. except directly from the importer.

BAY-WINDOW, or (corruptly) Bow-win'dow: a window forming a *bay* or projecting space outwards from a room; noticeable feature in Gothic architecture. The external walls of bay-windows are, for the most part, either rectangular or polygonal, the semicircular form from which the term *bow* was probably derived having been unknown before the introduction of the debased Gothic. Though mentioned by Chaucer, bay-windows are not found in any of the styles before the perpendicular, during the prevalence of which they were frequently introduced, particularly in halls. Bay-windows generally reach to the floor, and are frequently supplied with a seat called the *bay-stall*. There are many very beautiful examples of bay-windows in the colleges and halls of Oxford and Cambridge. When used in upper stories, such windows are supported on corbels, or large projecting moldings. See Oriel.

BAY-YARN: woolen yarn.

BAZA, *bâ'thâ* (*Basti* of the Romans): town of Spain, province of Granada; about 50 m. e.n.e. of Granada. It is an agricultural place, in a rich plain, and is generally ill-built and irregular. Pop. about 13,000.

BAZAINE, *bâ-zān'*, François Achille: 1811, Feb. 13—1888, Sep. 23; b. Versailles: marshal of France. He entered the army 1831; served in Algeria, Spain, the Crimea, and the Italian campaign of 1859; took part in the French expedition to Mexico, 1862, and from 1863 till the end of the war held supreme command of the French forces. When in Africa, 1836, he had gained the cross of the Legion of Honor; in 1856, he had been promoted to be Commander of the Legion; in 1863, he received the Grand Cross; and in 1869, he was made commander-in-chief of the Imperial Guard. At the outbreak of the great war with Germany, B. was at the head of the 3d army corps

near Metz. After the battles of Wörth and Forbach he took command of the main French armies, and 1870, Aug. 14, began a retreat from Metz. Defeated at Mars-la-Tour and Gravelotte, he retired within the fortifications of Metz, which was immediately invested by Prince Frederick Charles. Attempts to escape failing, B. capitulated, Oct. 27; when 3 marshals, over 6,000 officers, and 173,000 men laid down their arms and became prisoners of war. In 1873, B. was tried by a court-martial, and sentenced to degradation and death for having failed to do his duty. The sentence was commuted to 20 years' imprisonment. But in 1874 B. contrived to escape from the fortress on the Ile Ste. Marguerite, on the s. coast, where he was then confined, and ultimately made his way to Madrid.

BAZAR, or Bazaar, n. *bă-zâr'* [Pers. *bazar*, a market]: an oriental market room, open or covered, where goods are exposed to sale; a large room for the sale of goods; in western lands a sale of miscellaneous goods, especially of fancy goods for a charitable object, is now often styled B.

BAZARD, *bâ-zâr'*, Amand: 1791, Sep. 19—1832, July 29; b. Paris: French socialist. After the Restoration he helped to found the revolutionary society of the 'Friends of Virtue;' and in 1820, an association of French Carbonari (q.v.), which soon had 200,000 members. He was the leading conspirator in the 'plot of Befort.' Later, B., impressed with the necessity of a total reconstruction of society, attached himself to the school of St. Simon, and in 1825 became one of the editors of a St. Simonian journal, *Le Productcur*. In 1828, he lectured at Paris with great success. His socialistic views were afterwards published in the *chef d'œuvre* of the sect, *Exposition of the Doctrine of St. Simon* (1828–30). After the July revolution, the masses were attracted by the flattering doctrine of St. Simon that 'all social institutions ought to have for their end the moral, intellectual, and physical amelioration of the poor;' and in a short time, B. and his coadjutors had 'created a new society, living in the midst of the old,' with peculiar laws, manners, and doctrines. But B. soon separated from it, vainly sought to found a 'school' of his own, and in a heated discussion was stricken with apoplexy.

BAZOCHE, or Basoche, *bâ-zōsh'*: a kind of burlesque translation into French of the Latin word *basilica*, i.e., royal palace. When the French parliament ceased to be the grand council of the king, and confined itself exclusively to administering justice, a distinction of name necessarily sprang up between those noblemen who formed the royal train, and the *habitués* of the court of justice. The former were called *courtiers;* the latter, *basochians*, or parliamentary clerks. But inasmuch as the word *basilica* necessarily presupposed a king, the *basochians*, to keep up their dignity, gathered round a mock one of their own making, who resided at the Château des Tournelles or the Hôtel St. Pol. Such was the origin of the Basochian king

and kingdom. Their historical existence can be traced to the beginning of the 14th c., when Philip the Fair conferred on the brotherhood certain privileges. The principal authorities in this harmless monarchy, after the sovereign himself, were the chancellor, the masters of requests, the referendary, and the attorney-general. Henry III. suppressed the title of king, and conferred all the privileges and rights attached to that office on the chancellor. Still the B. continued to exist as a kingdom, minus its head, and affected on all occasions the language of royalty. Its jurisdiction included the consideration and decision of all processes and debates that arose among the clerks. It administered justice twice a week, and also caused a species of coin to be struck which had currency among its members; but if we are to judge from the proverb about *la monnaie de basoche*, it had small credit in the outer world. The mock-monarch had the extensive privilege of selecting at his pleasure, yearly, from the French royal forests, a tall tree, which his subjects, the clerks, were in the habit of planting, on May 1, before the grand court of the palace, to the sound of tambourines and trumpets. In the public sports, this fantastical little kingdom was worthily honored; its chancellor had rooms at the Hôtel de Bourgogne; at the carnival, the *basochians* joined themselves to the corps of the Prince of Fools, and to the performers of low farces and 'mysteries.' They acted in their turn a species of satirical 'morality' (q.v.), in which they made extensive use of the liberty granted them, in ridiculing vices and the favorites of fortune. Louis XII. patronized these amusements. In 1500, he gave the brotherhood of the B. permission to perform plays in the grand saloon of the royal palace. Francis I. witnessed them in 1538; but in 1540, they were interdicted as scandalous and incorrigible. This interdict applied only to those of Paris, for, several years after, we read of the Basochian farces of Bordeaux. In their later development, they seem to have resembled the *Fastnachtspiele* (Shrove-Tuesday Plays), popular in Germany both before and after the Reformation. They were the beginning of French comedy.

BDELLIUM, n. *dĕl'lĭ-ŭm* [L.—from Gr. *bdellĭŏn*—from Heb. *bedôlach*]: a gum-resin, resembling myrrh (q.v.) in appearance and qualities, but weaker and more acrid. High medicinal virtues were ascribed to it by the ancients, but it is now little used. It is supposed to be the produce of *Balsamodendron Roxburghii* in India, and of *B. Africanum* (also called *Hendelotia Africana*) in Senegal—trees or shrubs belonging to the nat. ord. *Amyridaceæ* (q.v.).—Egyptian B. is obtained from the Doom (q.v.) palm, *Hyphæne Thebaica*. A similar substance is yielded by *Ceradia furcata*, a half-succulent plant of the nat. ord. *Compositæ*, inhabiting the most sterile regions of the s.w. of Africa; while the Sicilian B., formerly used in medicine, is produced by *Daucus gummifer*, a species of the same genus to which the carrot belongs, growing on the coasts of the Mediterranean.

BE, v. *bē* [AS. *beon;* Gael. *bi,* to be; Gael. *beo,* alive: Sks. *bhu,* to be]: infin., impera., and subjunctive of the verb *am,* denoting to exist, to become, to remain; used in hypothetical and secondary propositions—as *'If I be,' 'If thou be.'* BEING, imp. *bē'ĭng.* BEEN, pp. *bĭn.* IF SO BE, in case. TO LET BE, to let alone; to omit. BE ALL, sum total. BE IT SO, a phrase of supposition; let it be so granted; grant it by permission; let it be so.

BE, *bĕ* [AS.]: a prefix, signifying *to make.* When be is prefixed to a *noun,* the noun becomes a *verb*—thus, CALM and FRIEND are nouns and NUMB is an adjective, but BECALM, BEFRIEND and BENUMB are verbs. BE prefixed to a verb signifies *about, over, for*—thus, SPEAK and THINK become BESPEAK and BETHINK. BE in a preposition, an adverb, or a conjunction, has the force of *by* or *in*—thus, BECAUSE, conj. signifies, by the cause of, BEHIND, prep. in the rear of. *Note.*—BE was formerly much more extensively employed as a prefix than now. Indeed, *be* may be prefixed to any verb or participle. In most AS. and OE. words *be* did not seem to affect the primary much, while in others the sense was intensified or widened. In every case where a form in *be* is not found, the reader can turn to the primary Eng. word.

BEACH, n. *bēch* [AS. *becc,* a brook: Sw. *backe,* an ascent: Icel. *bakki,* a bank]: the shore of the sea; the space on the margin of a sea over which the tide alternately flows and ebbs; the margin of the sea or of a large river: V. to run a ship on shore. BEACH'ING, imp. BEACHED, pp. *bēcht,* run on shore—as a boat or ship: ADJ. having a beach. BEACHY, a. *bēch'ĭ,* having beaches.

BEACH, *bēch,* ALFRED ELY: b. Springfield, Mass., 1826, Sep. 1; d. 1896, Jan. 1. He was a son of Moses Yale Beach, and after receiving an education in the Monson Academy at Monson, Mass., he was associated with his father in the publishing business of the New York *Sun.* In 1846 he formed a partnership with his life-long friend and schoolmate, Mr. Orson D. Munn, of Monson, Mass., and purchased the *Scientific American* from Rufus Porter, combining with the business of publishing that of soliciting patents. In 1853 he invented the first typewriter which printed raised letters on a strip of paper, intended for the blind, and was awarded a gold medal at the Crystal Palace Exposition. In 1867 he constructed a suspended tube 8 feet in diameter by 100 feet long, through which passengers were carried back and forth in a tightly fitting car, as the air was exhausted from or forced into the tube by a rotating fan. He also devised means for transporting letters through a tube under the street, by which they could be conveyed directly to the post-office when dropped into a street letter-box.

His most important invention,—a shield for tunneling under streets or rivers without disturbing the surface,—was made in 1868, and became known as the Beach shield. It resembled a gigantic hogshead with the heads removed,

the front circular edge being sharp, and the rear end having a thin iron hood. This cylinder is propelled slowly forward through the earth by several hydraulic rams forced out from the rear of the shield, by the operation of a single hydraulic pump, against the completed tunnel in the rear. By this method only the amount of earth to be occupied by the tunnel is excavated. After the shield is forced forward the hydraulic rams are pushed back, and in the thin hood at the rear a new section of the tunnel is constructed. In 1869, by means of such a shield, Mr. Beach constructed a tunnel nine feet in diameter under Broadway, New York, from the corner of Warren street south to a point opposite the lower side of Murray street, and in 1870 a car was sent to and fro on tracks through this tunnel by pneumatic power—the first underground transit in New York. From 1872 to 1876 Mr. Beach edited an annual publication entitled 'Science Record,' published by the *Scientific American*. In 1876 he originated the *Scientific American Supplement* devoted to the publication of scientific matters *in extenso*, taken largely from exchanges and foreign publications. He was also instrumental in beginning the publication of the *Scientific American Builders' Monthly*.

BEACH, Charles Fisk, American clergyman and lawyer: b. Hunter, N. Y. 1827, Sep. 5. He studied theology at Auburn Theological Seminary, N. Y., was pastor of Presbyterian churches 1854–73, editor and publisher *National Presbyterian* 1873–95, and was admitted to the bar 1896. He has published *The Muzzled Ox* (1866); *The Christian Worker* (1869); *Commentaries on the Law of Trusts and Trustees* (1897); *Monopolies and Industrial Trusts* (1898).

BEACH, Charles Fisk, Jr., American legal writer: b. Kentucky, 1854, Feb. 4. He was called to the bar in New York 1881, and practised in that city till 1896, but since the last named date has practised in London and Paris. Since 1904 he has been professor of American law in the University of Paris. His especial field is railway and corporation law, and he has published treatises on *Receivers* (1887); *Wills* (1888); *Railways* (1890); *Private Corporations* (1891); *Modern Equity Jurisprudence* (1892); *Public Corporations* (1893); *Modern Equity Practice* (1894); *Injunctions* (1895); *Insurance* (1895); *Contracts* (1897); *Contributory Negligence* (3d ed. 1899).

BEACH, David Nelson, American clergyman: b. South Orange, N. J., 1848, Nov. 30. Entering the Congregational ministry he was successively pastor of Congregational churches in Westerly, R. I., 1876–9; Wakefield, Mass., 1879–84; Cambridge, Mass., 1884–96; Minneapolis, 1896–8; Denver, 1899–1902; president and professor of homileties, Bangor Theological Seminary since 1903. He was active in banishing the saloon from Cambridge and has been prominent in advocating a modified Norwegian liquor system in Massachusetts.

He has written *Plain Words on Our Lord's Work; The Newer Religious Thinking; How We Rose; The Intent of Jesus; Statement of Belief* (1897); *The Annie Laurie Mine* (1903); *Meaning of the Battle of Bennington* (1903); etc.

BEACH, Frederick Converse, American editor: b. New York, 1848, March 27. In 1855 he removed to Stratford, Conn., where he received an education at public and private schools. In 1864, as a pastime, he began the practice of photography with his father, Alfred Ely Beach (q.v.), and has continued his interest in the art ever since. In 1866 he suggested to the commissioner of patents the utility and practicability of photo-lithographing the United States patents, a plan which was subsequently adopted. In 1868 he graduated from the Sheffield Scientific School of Yale University with the degree of Ph. B. In 1869, after engaging in the business of patent solicitor at Washington, D. C., he returned to New York and was appointed assistant superintendent of the construction of the Beach pneumatic tunnel under Broadway, New York. (See Beach, Alfred Ely.) Subsequently he took up the manufacture of electrical instruments. In 1877 he entered the office of the *Scientific American*, assisting his father, and after the latter's demise he became one of the editors.

He has made extensive experiments in photography and written much relating to the art. In 1884 he founded the Society of Amateur Photographers of New York, the name of which was afterward changed to the Camera Club of New York. In 1885 he assisted in organizing the American Lantern Slide Interchange. In 1889 he was instrumental in establishing a monthly magazine entitled *The American Amateur Photographer*. In 1902 he was appointed editor-in-chief of the *Encyclopedia Americana*, the policy of which it was determined should give full credit to all matters pertaining to America and Americans.

BEACH, Mrs. H. H. A. (Amy Marcy Cheney), American composer: b. Henniker, N. H., 1867, Sept. 5. She studied music from childhood, and made her first appearance in public as a pianist at the Boston Music Hall when 16 years old. She has composed a mass in E flat; 'The Rose of Avontown,' a cantata for female voices; a Gaelic symphony; a symphony, anthems, songs, and compositions for various musical instruments and full orchestras.

BEACH, Harlan Page, American missionary: b. South Orange, N. J., 1854, April 4. He was graduated at Yale in 1878 and at Andover Theological Seminary in 1883. During 1878–80 he taught at Phillips Andover Academy; in 1883 he went to China as a missionary, remaining there seven years. Soon after his return he became head of the School for Christian Workers, Springfield, Mass., and in 1895, educational secretary of the Student Volunteer Movement for Foreign Missions. His publications include: *Dawn on the Hills of T'ang* (1898); *Knights*

of the Labarum; or Four Typical Missionaries (1898); *New Testament Studies in Missions* (1899); *Protestant Missions in South Africa* (1900); *Geography and Atlas of Protestant Missions* (1902); *India and Christian Opportunity* (1904).

BEACH, Miles, American jurist: b. 1840; d. 1902. He graduated at Union College, Schenectady, N. Y., studied law, and practised in Troy, N. Y. When 27 years of age he removed to New York and in 1879 was elected judge of the court of common pleas, holding that office till 1894, when he passed to the bench of the supreme court of the State.

BEACH, Moses Sperry, American inventor and editor: b. Springfield, Mass., 1822, Oct. 5; d. 1892, July 25. He was the son of Moses Yale Beach (q.v.), and in 1845 he married Chloe Buckingham, of Waterbury, Conn., and in the same year became joint proprietor, with George Roberts, of the Boston *Daily Times*. Soon after this he became associated with his father and brother in the publication of the New York *Sun*, and acquired the sole ownership of it in 1851, transferring it in 1868 to Charles A. Dana. It was while he was conducting the publication of the *Sun* that he invented and made several important improvements in printing-presses, which were patented, a few now being in use. Among them were the feeding of roll paper to the press instead of flat sheets, apparatus for wetting the paper prior to printing, and another improvement for cutting off sheets after printing; also a method of adapting newspaper presses to print both sides of the sheet at the same time, as is now customary. In 1867 he visited the Holy Land, on the steamer Quaker City, in company with the distinguished party of which 'Mark Twain' was a member, and whose experiences formed the basis of Twain's book, *The Innocents Abroad*. Mr. Beach brought back an olive-tree from the Mount of Olives, from which was made a pulpit stand that is at present in Plymouth Church, Brooklyn.

BEACH, Moses Yale, American inventor and publisher: b. Wallingford, Conn., 1800, Jan. 15; d. 1868, July 17. He received a common school education and before he was 21 married, and with a partner opened a cabinet factory at Northampton, Mass. In 1822 he established himself at Springfield, Mass., where he was very successful. He expended considerable money on a stern-wheel steamboat, the first to ply on the Connecticut River above Hartford. A powder engine intended for its propulsion proved ineffective. In 1829 he obtained an interest in a paper-mill and removed to Saugerties, N. Y., where his inventive faculty produced a rag-cutting machine, which he patented and which is still used in all paper-mills. In 1835 he purchased from his brother-in-law, Benjamin Day, the New York *Sun*, the first 2-cent paper (then a comparatively new sheet), and to Mr. Beach was due the subsequent growth and popularity of that

newspaper. In 1846 President Polk sent Mr. Beach on a secret mission to Mexico. In 1857 Mr. Beach retired from active business and settled in his native town, where he died.

BEACH-FLEA, one of a group of small amphipod Crustaceans (*Orchestia agilis*) which abound under sea wrack near high-water mark. When the dry weed is lifted they will be seen leaping like fleas, by means of the last three pairs of abdominal legs. They are brown, of the same color as the weed and wet sand beneath, about a quarter of an inch in length or about one half as large as the larger and more southern kind of beach-flea (*Talorchestia longicornis*), which is nearly an inch long. Consult: Arnold, *Sea Beach at Low Tide.*

BEACH-GRASS. See AMMOPHILA.

BEACH-PEA, a leguminous plant growing on beaches. See also LATHYRUS.

BEACH PLANTS, the usually sparse vegetation of sea and lake shores above the water-line and below the cliffs or dunes, notable for its resemblance to the vegetation of deserts. The plants of sea beaches are closely similar to those of fresh-water shores, and not, as might be inferred, different on account of the salt content of the soil as an influencing factor. (See HALOPHYTES.) Bordering the water is a strip of sand or gravel where, on account of summer wave action, land plants cannot gain a foothold, and where, because of exposure to sun and air, water plants are unable to live. Contiguous to this border is a zone of vegetation almost wholly restricted by winter wave action to annuals. Still farther back from the water is the region of perennials especially characterized by rosette plants and plants with underground storage organs. This region is safe from wave action at all times. Beach plants, like desert plants (see XEROPHYTES) are capable of withstanding more intense heat, cold, and light, and more violent winds than any other plants of ordinary climates. Other common terms for this vegetation are littoral, shore, and strand plants. See DISTRIBUTION OF PLANTS.

BEACH'ES, RAISED: tracts of ground at various elevations above sea-level, which have evidently been sea-beaches at a former time. Modern geology teaches that the frame of the land is liable to risings and depressions, even in the present age. Several districts in different parts of the world have been raised by earthquakes. After the Champlain period, beaches were raised 50 ft. in s. New England; 200 in Me.; 500, Labrador; 1,000, far north. Eastern Sweden, on the Gulf of Bothnia, has been raised 3 ft. in the last hundred years. As to the elevation of ancient beaches, the evidences are, first, the levelness of the ground in the general direction of the present shores over considerable spaces; second, the alternating beds of sand and gravel, such as we see composing the present

B.; and, third, the presence of marine shells, which, in our country, are generally of species now living in the boreal seas. There are also what may be called terraces of erosion—indentations made in a rocky coast by the lip of the sea in ancient times—usually consisting of a flat platform presenting patches of gravel, and of a backing wall or sea-cliff, the latter sometimes penetrated with deep caves. In Scotland, there is a very decided terrace of erosion all round the bold coasts of the West Highlands and Western Islands, at an elevation of about 25 ft. above the level of the similar, but scarcely so well-marked, indentation which the sea is now making. In Lapland, there is a similar terrace, but stooping from 220 to 85 ft. in the course of 30 m. There is also a clear and well-marked terrace of the same kind, at about 520 ft. above the present sea-level, behind Trondhjem in Norway. The existence of raised beaches affords direct evidence of changes of level between the sea and the land in comparatively recent times, and explains the widespread occurrence of sedimentary rocks over continental areas. Many large lakes are also fringed by terraces, but in this case they have resulted from a lowering of the water level and not from coastal movements.

BEACHY HEAD: loftiest headland on the s. coast of England, projecting into the English Channel, 2½ m. s.s.w. of Eastbourne, Sussex. It consists of perpendicular chalk-cliffs, 564 ft. high, forming the e. end of the South Downs. Several caverns have been cut out in the rock, for shipwrecked seamen to take refuge in; but shipwrecks have been far fewer since 1828, when the Bell Tout Lighthouse was built here, 285 ft. above the sea, lat. 50° 44′ 24″ n., long. 0° 12′ 42″ e., visible more than 20 m. distant. The view from Beachy Head, in clear weather, extends to Hastings, the Isle of Wight, and France. The cliffs are the resort of myriads of sea-fowl. Off this point, the French fleet beat the combined English and Dutch fleets, 1690.

BEACON, n. *bē′kn* [AS. *beacen*, a sign, a nod: Gael. *beachd*, watching: Icel. *bakna*, to signify by nodding]: a lighthouse or signal to direct navigation; something that gives notice of danger: V. to afford light or direction, as a beacon. Beaconed, pp. *bē′knd:* Adj. provided with a beacon. Bea′coning, imp. Beaconage, n. *bē′kn-āj*, money paid for the support of a beacon.

BEA′CON: any signal set upon a height, especially the alarm-fires formerly used to spread the intelligence of foreign invasion or other great event. These fire-signals were in use in the earliest times, and notices of them are found in the literary remains of ancient Persia, Palestine, and Greece. They were made by kindling a pile or bale of wood on the tops of lofty mountains, and keeping the flame bright by night, or having the fire so covered as to emit a dense smoke by day. There were various preconcerted modes of exhibiting the light or smoke, so as to indicate the

nature of the intelligence. Thus, an act of the parliament of Scotland, 1455, directs that one bale on fire shall be warning of the approach of the English in any manner, two bales blazing beside each other, that they are *coming indeed;* and four bales, that they are coming in great force.

An early instance of B. signals is found in the book of the prophet Jeremiah, in his call, in chap. vi. 1, to the people of Benjamin to kindle a fire signal on one of their mountains: 'Set up a sign of fire in Beth-haccerem; for evil appeareth out of the north, and great destruction.' An instance of the use of a line of beacons in very ancient times is given in a passage of the tragedy of *Agamemnon*, by the Greek poet Æschylus. The commander-in-chief of the Greek army at the siege of Troy is represented as communicating the intelligence of the fall of the city to his queen, Clytemnestra, at Mycenæ, in the Peloponnesus. The line consists of eight mountains, and the news is supposed to be conveyed in one night from Troy.

In England, the beacons were kept up by a rate levied on the counties, and had watches regularly stationed at them, and horsemen to spread the intelligence during the day, when the beacons could not be seen. They were carefully organized while the Spanish Armada was expected.

Bea'con, in maritime affairs, is a signal for warning against dangers, or for indicating the proper entrance into a channel, harbor, or river. Generally speaking, a B. is fixed; whereas a *buoy* floats. In recent times, the construction of *floating* beacons has drawn attention, as it is conceived that they might in many cases supply the place of much more costly light-houses. A floating B. for the Goodwin Sands (q.v.) comprised a hollow wrought-iron floating vessel, with six water-tight compartments; a tower 28 ft. high, tapering in diameter from 7 to 3½ ft.; and a ball at the top of 3½ ft. diameter: some leakage frustrated its continued use. Many beacons are now made in which a bell is sounded instead of a light shown, as a warning: one is so constructed as to yield a continuous bell ringing, so long as tide or current is flowing. It has a keel at the bottom, to make the B. turn with the tide, and channels below the line of flotation, through which the tide-water or current flows; the water causes two undershot wheels to revolve; and this revolution, by means of axes, cranks, rods, guides, and levers, brings a hammer to act on a bell. Some beacons on this principle have a bell of 2 cwt. Nearly allied with beacons, although not strictly such, are *gong*-beacons, which have in many cases been supplied to light-vessels. Fog sirens, fog whistles, and fog horns are similarly employed; but these audible signals are connected with light-houses or light-ships, and are only beacons in an indirect sense. See Buoy and Light-house.

BEACONSFIELD, *bĕk'ŭnz-fēld*, Earl of: see Disraeli, Benjamin.

BEAD, n. *bĕd*, Beads or Bedes, n. plu. *bĕdz* [AS. *bead; gebed*, a prayer: Dut. *bede*, an entreaty]: in Anglo-Saxon and Old English, 'a prayer,' and hence came to mean the

small perforated balls of gold, silver, glass, ivory, hard wood, etc., used for keeping account of the number of prayers repeated. A certain number strung on a thread makes a rosary (q.v.). A *bedesman* or *bedeswoman* is one who prays for another. Persons of station and wealth in old times 'had regularly appointed bedesmen, who were paid to weary heaven with their supplications.' Bedesmen appointed to pray for the king and state sometimes lived together, and hence *bedehouse* is synonymous with an almshouse, and *bedesman* may mean a recipient of certain charities. A common form of signature formerly was: 'Your bounden bedesman,' or, 'Your humble bedeswoman,' instead of the modern, 'Your obedient servant.' In *architecture* or *carpentry*, BEAD is a small round molding, sometimes called an astragal; also called BEAD'ING; in *gun-making*, small piece of metal on a gun-barrel, used for taking a sight before firing; in *book-binding*, a roll on the head-band of a book. BEAD TREE, a tree the pips and nuts of whose fruit are pierced and strung as beads; the *Melĭă azed'arach*, ord. *Melĭăcĕæ*. BEAD-PROOF, said of alcoholic liquors strong enough to carry bubbles for a time on the surface after being shaken; said also of a liquor whose strength has been ascertained by one of several numbered glass-beads placed in the liquor, floating in it, while the others differently numbered sink. BEAD-ROLL, in the Rom. Cath. Church, a list of those to be mentioned at prayers. BEAD-LOOM, a gauze loom in which there are beads strung at the spots where the threads intersect each other. BEAD-MOLD, n. a fungus organization, the stems of which consist of cells loosely joined together so as to resemble a string of beads. BEAD-SNAKE, n. a beautiful little snake (*Elaps fulvius*), variegated with yellow, carmine, and jet black. It belongs to the family *Elapidæ* of the colubrine sub-order of snakes. Though venomous it rarely uses its fangs. It is about two feet long. Its chosen habitat is in the sweet-potato fields of America See BATATAS. ST. CUTHBERT'S BEADS, the detached joints of fossil Encrinites (q.v.), whose central perforation permitted them to be strung as beads, and from the fancied resemblance, in some species, of this perforation to a cross, they were formerly used as rosaries, and associated with the name of St. Cuthbert:

> On a rock by Lindisfarn
> St. Cuthbert sits, and toils to frame
> The sea-born beads that bear his name.

They are known also as Entrochites, or wheelstones.

BEADS.—From the use of beads on a string as helps in reciting prayers, grew the application of the term to a kind of personal ornament, made of various materials, as glass, pottery, metal, bone, ivory, wood, jet, amber, coral, etc., and perforated so that they can be strung on threads and made into necklaces, bracelets, rosaries, etc., or worked on cloth as a kind of embroidery. Their use is of great antiquity, for they are found in the most ancient of the Egyptian tombs as decorations of the dead, and beads supposed to

have been used in barter by the Phœnicians in trading with various nations in Africa are still found in considerable numbers, and are highly valued by the natives under the name of 'Aggry' beads. Ever since the 14th c., the manufacture of glass beads has been an important industry of the Venetians; on the island of Murano several thousand workingmen are employed in this manufacture. The manufacture is curious; the melted glass, colored or uncolored, is taken from the pot by two workmen, who slightly expand the gathering by blowing down their blow-pipes; they then open up the expanded glass, and join the two together whilst still very soft. This done, they walk rapidly away from each other in opposite directions, in a long shed like a small rope-walk, and draw the glass, which retains its tubular character given by the blowing, etc., into rods of great length, and often extremely small diameter. On cooling, which takes place very quickly, these long rods are broken up into short lengths of about a foot, and a small number of these shorter rods are placed on a sharp cutting edge, after being annealed, and are chopped into lengths. The roughly cut beads are next mixed very thoroughly with fine sand and ashes, then put into a metal cylinder over a brisk fire, and turned round rapidly as they begin to soften with the heat. They are then agitated in water, which cleans away the sand and ashes, and leaves the holes free, after which they are strung.

BEADLE, n. *bē'dl* [AS. *bydel*—from *bidan*, to wait: F. *bedeau;* OF. *bedel*, a beadle—from OH. Ger. *butil*, a herald: It. *bidello*]: *originally*, one who proclaims; a messenger or herald; in England, an inferior church or parish officer chosen and appointed by the vestry. His business is to attend the vestry, to give notice of its meetings to the parishioners, to execute its orders, to assist the parish constable, and generally to execute all the orders and business of the vestry and of the parish, as their messenger or servant. Shaw's *Parish Law*, c. 19. See PARISH: VESTRY. The B. holds his office during 'pleasure, and he may therefore be dismissed at any time for misconduct by the parishioners assembled in vestry.' BEADLESHIP, n. the office of a beadle.

BEAGLE, n. *bē'gl* [Gael. *beag;* W. *bac*, little]: small variety of hound, formerly much used in England for hare hunting, now almost superseded by the harrier (q.v.), to which the name B. is sometimes given. The true B. is smaller than the harrier, exceeding fifteen inches in height at the shoulder, sometimes considerably smaller, stout and compact in make, with long pendulous ears, smooth-haired, sometimes dark-brown, with a streak or spot of white about the neck, sometimes white with black or reddish spots. There appears to have been also a rough-haired variety. The B. is remarkable for its acute scent and perseverance; and although much distanced by the hare at first, is almost sure to kill it. It was custo-

mary in England, in former times, when beagles were used, to follow the chase on foot, a hunting-pole being employed to assist in leaping. During the chase, the B. gives utterance to a cry which has been regarded as particularly musical; and Queen Elizabeth had little 'singing-beagles,' one of which could be placed in a man's glove. The smaller breeds were preferred, perhaps, at first, for the prolongation of the chase; and the diminutive size of a pack or 'cry' of beagles became a boast. The smallest are sometimes called *lap-dog beagles.*

BEAK, n. *bēk* [F. *bec;* It. *becco,* a beak—from mid. L. *beccus:* Gael. *beic,* a point, a nib]: the bill or nib of a bird; any pointed thing; in *naut. arch.,* a piece of brass shaped like a beak, terminating the prow of an ancient galley. BEAK-HEAD, n. an architectural ornament, especially of the Norman and Early English style, resembling the head of a beast united to the beak of a bird. BEAK-HEAD-BEAM, the largest beam in a ship. BEAKED, a. *bēkt,* having a beak; pointed.

BEAK, v. *bēk* [OE. and Sc.]: to bask; to warm; to warm one's-self.

BEAKED, or BECQUÉ, *bā-kā:* term in heraldry. When the beak of a fowl is of a different tincture from the body, it is then said, in heraldry, to be beaked of such a tincture. If its legs are of the same tincture, it is then beaked, and membered so and so. In place of B., Guillim commonly says 'armed.'

BEAKER, n. *bēk'ėr* [Ger. *becher,* a goblet: Icel. *bikarr*]: a large beaked cup or glass; a flagon.

BEAL, *bēl,* GEORGE LAFAYETTE, American military officer: b. Norway, Me., 1825, May 21; d. 1896, Dec. 11. When the Civil War broke out he was captain of the Norway light infantry, and with this company was mustered into the 1st Maine regiment for the three month's campaign. At the end of this service he was commissioned colonel of the 19th Maine infantry, which took part in the battles of Cedar Mountain and Antietam and covered the retreat of Gen. Banks from Winchester to Williamsport, Va. He was mustered out with his regiment in 1863, May; volunteered again; was made colonel of the 29th Maine, and promoted to brigadier-general of volunteers 1864, Nov. 30, for his services in the Red River campaign. On 1866, Jan. 15, he was mustered out of service with the brevet of major-general of volunteers. In 1880–5 he was adjutant-general of Maine, and in 1888–94, State treasurer.

BEAL, SAMUEL, English orientalist. He was educated at Trinity College, Cambridge, graduating therefrom in 1847. Some time after, he entered the royal navy as chaplain, and in that capacity saw active service in China and Japan. He made a close study of the Chinese and Japanese languages, and on his retirement from the navy in 1877 was elected professor of Chinese at University

College, London. His principal work was tracing the early history of Buddhism in original Chinese records, and the results of his work were given to the world in several volumes, notably: *The Catena of Buddhist Scriptures* (1872); *The Legend of Buddha* (1876); *Buddhist Records of the Western World* (1884); *Life of Hienen-Fsiang* (1888); etc. He also catalogued a large series of Japanese Buddhist works.

BEAL, William James, American botanist: b. Adrian, Mich., 1833, March 11. He graduated at the University of Michigan in 1859; taught in various institutions 1859–70, since which time he has been professor of botany in the Michigan Agricultural College. He is a Fellow of the American Society for the Advancement of Science, and was president of the natural history section of this society in 1883; first president of the Association of Botanists of the United States Experimental Stations in 1888, etc. His works include *Grasses of North America* (2 vols.); *The New Botany; Plant Dispersal;* etc.

BEALE, *bēl*, Dorothea, English teacher: b. London, 1831. She became mathematical tutor in Queen's College in 1850, and later, Latin tutor in the school; head teacher in the Clergy School, in Casterton, in 1857; and principal of Cheltenham Ladies' College in 1858. Her publications include *Text-Book of English and General History*; *Chronological Maps; Report on Girls' Education Commission of* 1864; *Work and Play in Girls' Schools.* In 1880 she became editor of the *Ladies' College Magazine.*

BEALE, Edward Fitzgerald: military officer: 1822, Feb. 4—1893, Apr. 22; b. Washington, D. C.; son and grandson respectively of two U. S. naval officers. He was sent first to Georgetown College, and afterward was appointed a cadet in the U. S. Naval Academy, where he graduated 1842. He served with distinguished gallantry during the Mexican war, at the conclusion of which he received the appointment of supt. of Indian Affairs in Cal. and N. M. While in that country he was commissioned brig. gen., and placed at the head of an expedition against the Indians. B. was engaged 1850–60 in exploration through the western country, and was appointed by Pres. Lincoln 1861 surveyor-gen. of Cal. He was appointed minister to Austria 1876 by Pres. Grant; but resigned 1877, and has since managed his great cattle and sheep ranch in California.

BEALE, Joseph, M.D.: 1814, Dec. 30—1889, Sept. 23; b. Philadelphia. He graduated in medicine at the Univ. of Pennsylvania 1836, and engaged in private practice. In 1838 he entered the U. S. navy as asst. surgeon, and continued in the service thereafter, being appointed surgeon-gen. of the U. S. Navy, 1873, Dec. He was retired from the service 1876, with the rank of commodore. B.'s record shows a period of sea-duty of 17 years 1 month, shore and other duty 16 years 7 months, and unemployed 4 years 8 months—a long service for a naval surgeon.

BEALE, Lionel Smith, English physician and biologist: b. London, 1828, Feb. 5; d. 1906, March 28. He was the son of Lionel John Beale, M.R.C.S. He was educated at King's College School and King's College, London, later becoming an honorary Fellow. In 1852 he established a laboratory for chemical and microscopical studies, and in the following year became professor of physiology and general and morbid anatomy in King's College, London. In the same college he held in succession the professorships of pathology and of the principles and practice of medicine, but in 1896 he retired from the latter post. He was a Fellow of the Royal Society, and for some years acted as treasurer of the Royal Microscopical Society. His published works deal with medical, anatomical, physiological, and biological subjects, the microscope, etc. Among the most important are *How to Work with the Microscope; Protoplasm; or, Life, Matter, and Mind; Life and Vital Action in Health and Disease; The Physiological Anatomy and Physiology of Man* (in collaboration with Dr. Todd and Sir W. Bowman); *Disease Germs; Life Theories and Religious Thoughts; The Mystery of Life; The Liver; Urinary Diseases; On Slight Ailments;* (1) *Vitality: an Appeal, an Apology, and a Challenge;* (2) *Replies to Objections, and a further Appeal;* (3) *Vitality: an Appeal to the Fellows of the Royal Society* (1899); (4) *Vitality: its Bearing on Natural Religion* (1900); (5) *Vitality and Science Teaching: an Appeal to all Teachers* (1900); *Religio Medici, Religio Scientiæ, Religio Vitæ* (1901), etc.

BEALL, *bēl*, Benjamin Lloyd: military officer: 1800—1863, Aug. 16; b. in the Dist. of Columbia. He entered West Point 1814, but did not graduate. In 1836–7, he served in the Florida war, being brevetted major 1837 for gallantry. In 1847 he was appointed maj. 1st U. S. dragoons, and became lieut.col. of the same regt. 1855, Mar. 3. After the annexation of Cal. to the United States, B. was in command in that country, and generally on the Pacific coast. In 1861, May, he was made col. 1st dragoons, and 1862, Feb. 15, placed on the retired list for his long and arduous service.

BEALL, William Dent: officer in the Revolutionary army: 1755—1829; b. Md. As maj. he served with distinction at Long Island, N. Y., and at Camden, S. C. In 1800 he was deputy adj.gen.; was col. 1810; and served in the war of 1812.

BEAM, n. *bēm* [AS. *beam*, a tree: Ger. *baum;* Icel. *badmr*, a tree]: any large and long piece of timber or iron; the principal piece of timber in a building (see Strength of Materials); the rod from which scales are suspended; the transverse pieces of framing extending across the hull of a ship; a ship's breadth (see Tonnage); the horn of a stag; name of three different parts of a weaving-loom; the long, crooked forepart of a plow which connects the coulter and the bridle; ray of light: V. to throw out rays, as the sun; to dart; to glitter or shine. Beam'ing, imp.:

ADJ. darting off light in rays. BEAMED, pp. *bēmd.* BEAMY, a. *bēm'ĭ,* having the massiveness of a beam of wood; radiant; antlered as a stag. BEAM or WALKING-BEAM: see STEAM-ENGINE. BEAM-BIRD, the spotted fly-catcher. BEAM-COMPASS, a pair of points for drawing and measuring, attached to a straight rod or beam instead of to a dividers. BEAM-ENDS, a ship is on her beam-ends when she lies much on one side. BEAM-ENGINE, in *mech.*, a steam-engine in which power is transmitted by a working or walking-beam, in contra-distinction to one in which the piston-rod is attached directly to the crank of the wheel shaft. BEAM-KNIFE, a two-handled knife used to shave hides stretched upon a beam. BEAM-SHIND, a. [Eng. *beam; shin*]: having the shin, or bone of the leg, rising with a sort of curve. BEAM-TREE, a kind of service-tree or mountain-ash; the *Pyr'us arĭă,* ord. *Rosăcĕæ.* SYN. of 'beam, v.': to gleam; ray; glimmer; glitter; shine; sparkle.

BEAM, of a ship: one of the main timbers which aid in supporting the decks. In ships of iron or steel, the beams usually are of that material. Beams stretch across from side to side, aiding to strengthen and uphold the sides of the hull as well as the decks: and they are themselves supported at the ends by massive pieces, called knees, standards, and clamps. Each timber B. is made of one fine piece, if possible; but if the length be too great for this, two or more timbers are scarfed together. Wherever it is practicable, the beams are upheld at or near the middle by pillars. The beams of all ships are generally made deeper in the middle than at the ends, in order that the decks supported by them may have a slight convexity on the upper surface, to carry off the rain-water readily.

The position of the beams, stretching across a ship at right angles to the direction of the keel, has given origin to many technical phrases used on shipboard. 'On the starboard B.' is applied to any distant point out at sea, at right angles to the keel, and—as viewed from the stern—on the starboard or right-hand side of the ship. 'On the port B.' similarly applies to the left hand. 'On the weather B,' is that side of the ship which receives or is towards the wind. 'Before the B.' is the bearing of any object when seen more in advance than *on* the beam. 'Abaft the B.' is the reverse of the expression just noted. 'On her beam-ends' is applied to the position of a ship when so much inclined to one side that the beams become nearly vertical.

BEAM'ING: a handicraft process in the cloth manufacture preliminary to weaving, formerly done by the weaver himself; but it has long since become a special employment, followed by workmen trained to the business as beamers, and, like hand-weaving, is tending to extinction by machinery—warping and beaming, in weaving by power, being conjoined into one operation. See WEAVING. B. is simply the art of winding the web on the weaver's beam in a manner suitable for weaving—the two essential require-

ments being firmness in the winding on of the web sufficient to withstand the reaction of weaving, and evenness in the spreading of the yarn at the required width. This is effected by what is called a beaming machine, which is simply a kind of roller-mill, extending from end to end of the beamer's shop. The weaver's beam, on which the web is to be wound, is set horizontally on two upright standards at the one end of the shop, and at the other end there is a friction-roller. set likewise level in a heavy frame, fixed to the floor, on which the web is wound like a rope, with the thrum-end out.

The number of pins or strands in the web being known, the beamer has merely to take a ravel (a comb-like utensil) with the corresponding number of teeth in the breadth required for the web, and filling each tooth successively with its respective pin, the spreading is completed; and the web being attached to the beam, the winding on of the web is a common crane operation, in which the tension on the yarn is regulated by the friction on the friction-roller. The beamer may thus beam for 400 weavers.

BEAM-TREE, WHITE (*Pyrus Aria*, see PYRUS): a tree of 20-40 ft. in height, native of almost all parts of Europe and of corresponding climates in Asia. It has been variously referred by botanists to several allied genera, *Sorbus*, *Cratægus*, and *Mespilus*. It has a straight, erect trunk, and a round or oval head; the leaves are ovate, cut and serrated (in some varieties, deeply lobed), white and downy beneath; the flowers in large terminal corymbs; the fruit scarlet, of the size of small peas. The fruit is acid and astringent, but becomes agreeable by incipient decay; it is sometimes called Sorb or Service-berry, and resembles the true Service (q.v) in quality, although much smaller. Beer is made of it by fermentation. The wood is very hard and fine-grained; it is used for cogs for the wheels of machinery. The whiteness of the foliage makes the tree—sparingly introduced—ornamental in plantations.

BEAN, n. *bēn* [Ger. *bohne:* Icel. *baun:* W. *ffaen:* L. *faba*]: a longish round or flattish round vegetable contained in a pod; the common field-bean is the seed of *Vĭcĭă făbă*, ord. *Legumĭnōsæ*. BEAN TREFOIL, a small tree of the genus *Anăg'yris*, bearing curved pods, ord. *Legumĭnōsæ* BEAN-CA'PER, a plant so named on account of the flowers being used as a substitute for capers; the *Zygophyl'lum fabāgō*, ord *Zyg'ophyllăcĕæ*. BEAN-TREE, the Swedish bean-tree, *Pyrus intermedia;* the bean-tree of Australia, *Castanospermum australe*, a leguminous species belonging to the section *Sophoreæ*. BEAN-COD, n. the legume of a bean. BEAN-FLY, a fly of a pale purple color found on bean-flowers. BEAN-GOOSE, a migratory bird visiting England. BEAN-ORE, n. in *mining*, brown iron ore, occurring in ellipsoidal concretions. BEAN-SHOT, n. in *metal-working*, copper formed into shot like gravel by being poured in a melted state into water.

BEAN (*Faba*): genus of plants of the nat. ord. *Legumi*

nosæ, sub-ord. *Papilionaceæ*, included by Linnæus and many other botanists in the genus *Vicia* (see VETCH), from which it is distinguished chiefly by the leathery tumid pods, spongy within, and by the large scar on the end of the seed. It is an annual plant, with thick long pods, and seeds more or less ovate and flattened.

The B. has been cultivated from very early times. It was grown in Egypt and Palestine, and was so highly regarded by the Romans that the family of the Fabii is said to have taken its name from this plant. After a rude fashion the Indians cultivated this crop before Columbus discovered America, and it has long been extensively produced in all settled portions of the country. In common terms there may be said to be two great classes of the B.—the Bush B., grown both in fields and in gardens; and the Pole B., essentially a garden plant. Of some varieties only the ripened seeds are used, of others the seeds are eaten before they become hard, and of some sorts both pods and seeds are used in a green state.

The Bush B. can be grown on almost any kind of soil that is capable of supporting vegetation, but is much more prolific on fertile land than on soils in low condition. Like other legumes it is a good crop to precede grain, as its roots gather and store nitrogen from the air which permeates the soil. The ground should be well plowed and harrowed, and fertilizers containing rather large proportions of potash and phosphoric acid may be profitably applied. If yard manure is used it must be thoroughly decomposed, or there will be excessive growth of vines and light yield of seed. Rows may be 2–3 ft., and hills 12–18 in., apart, with 6 or 8 seeds in each hill; or the seeds may be scattered in a continuous row. From ¾ to 1½ bushels of seed per acre will be required. Planting must be delayed till all danger of frost is passed. Where only small quantities are grown the planting is by hand, or with a corn-planter; but in the large B.-growing sections a machine for the purpose is often used. The B. is sometimes grown as a 'stolen crop' with corn, being planted between the hills; but the plan is not to be recommended. The ground should be kept free from weeds, by cultivation, and by hoeing if required, till the plants blossom. If there are large weeds later in the season they should be pulled by hand. Harvesting should be done as soon as the crop is ripe, or earlier if there is danger of frost. It is done usually byhand, but machines for the purpose have recently been introduced. When the plants are pulled, the dirt adhering to the roots should be shaken off and the plants laid on the ground to dry. If the vines are green, they should be put in small stacks, with the tops out, and left for two or three weeks to dry. When nearly cured they can be spread for a few hours in the sun, and then drawn to the barn. Thorough curing is indispensable, and exposure to rain and dew should be avoided as much as possible. Threshing is usually by hand, but can be done with an ordinary threshing machine if the cylinder is sufficiently raised. There are also machines made specially for thresh-

ing this crop. Great care should be taken in cleaning beans, and it is important that they should be picked over by hand, and all discolored specimens removed. They should be perfectly dried before being stored in large quantities. On good land prolific varieties will yield 20–25 bushels per acre. The legal weight ranges, in different states, from 60 to 64 lbs. per bushel. The vines are sometimes used for feeding purposes, but unless harvested when green they are not of very much value.—The Pole B. is much more tender than the Bush B. The soil should be rich, warm, and thoroughly pulverized. Planting must be deferred till the weather is warm and settled. Hills containing a liberal quantity of compost are to be made 4 ft. apart each way, a pole 5–8 ft. long, firmly set in each, and 4–6 seeds planted around it. The seeds are to be covered 2 in. deep. By cultivation and hoeing, the ground must be kept clean, and as the vines grow they should be tied to the poles. The beans are sold either in the pods or shelled, according to the demands of the market.

About 175 varieties of the B. are sold by seedmen in the U. S. Of these far the greater number belong to the Bush class. They vary greatly in color, size, productiveness, and length of season required in which to mature. The Broad Windsor, and other English varieties, do not thrive in this country, and only a very few English sorts are kept by our seed dealers.

The principal enemy of this crop is the B.-weevil (q.v.). —See Kidney Bean: Lima Bean.

BEAN, St. Ignatius's: see Strychnos.

BEAN-CAPER: see Zygophyllaceæ.

BEAN GOOSE: see Goose.

BEAN, Tarleton Hoffman, American ichthyologist: b. Bainbridge, Pa., 1846, Oct. 8. He graduated at Columbian University, Washington, D. C., 1876. He was editor of the 'Proceedings and Bulletins' of the United States National Museum, Washington, 1878–86, and of the 'Report and Bulletin of the United States Fish Commission,' Washington, 1889–92; was assistant in charge of the division of fish culture in the United States Fish Commission, 1892–5, and curator of the department of fishes in the United States National Museum, 1880–95. In 1893 he represented the United States Fish Commission at the World's Columbian Exposition, and in 1895 at the Atlanta Exposition. In 1895 he became director of the New York Aquarium, and in 1899 was appointed director of forestry and fisheries of the United States Commission to the Paris Exposition of 1900. From 1902–5 he was chief of the departments of fish, game and forestry at the Louisiana Purchase Exposition. His works include *The Fishes of Pennsylvania, The Salmon and Salmon Fisheries, Oceanic Ichthyology* (with George Brown Goode); *The Fishes of Long Island* (1902); part author of *The White World* (1902); *The Fishes of New York* (1903); etc. He has also contributed articles to *Forest and Stream.*

BEAN-WEEVIL (*Bruchus obsoletus*): insect, very destructive to beans. It was found in Indiana feeding on a wild plant allied to the bean, and was described 1831 by Thomas Say. Several years later it was found infesting the cultivated plant. From that time it has spread through large portions of the country, and has multiplied to such an extent as to make it extremely difficult in many localities to produce a crop of perfect beans. It is smaller than the Pea Weevil (q.v.), which in other respects it closely resembles. The eggs of the female beetle are deposited on the green pods of the bean, and hatch in a few days. The larvæ work their way through the pods into the seeds on whose interior substance they feed. With the growth of the pods and the seeds, the holes made by their entrance are closed, and when the crop is ripe there is no indication of their presence. Many of the larvæ pass through their various transformations before cold weather, but others continue to feed during the winter, and do not become perfect beetles until the next spring. On the approach of warm weather these beetles leave their cells, and, like those which completed their transformation the preceding autumn, seek sheltered places in gardens or fields, where they remain till a new crop of beans is sufficiently developed for them to attack. In badly infested lots it is not unusual to find quantities of beans each of which contains 10 to 20 weevils. For injury already inflicted by these pests there is no remedy. Preventive measures consist in heating or fumigating infested beans as soon as harvested, and in planting seed obtained from some locality where the pest has not appeared, though the latter plan is not always practicable. Planting late in the season, June 25 to July 10, has been effectual in some places, but cannot be practiced far north, as it does not leave sufficient time for the crop to mature. Heating the beans, as soon as they are ripe, to a temperature of 145° will kill the larvæ which they contain, and if carefully done will not prevent germination of the seed. A more desirable and equally efficient method is to dry the seed thoroughly as soon as it is harvested, place it in air-tight barrels, and turn into each barrel, just before heading, a gill of bisulphide of carbon, chloroform, or spirits of turpentine. These materials should not be used near a fire or a lighted lamp. When the barrels are opened in the spring, the beans should be carefully examined, and if any of the pests are found alive another fumigation should be given. As is the case in contests with other insect enemies, individual efforts avail but little. The work of a careful farmer may be neutralized by the neglect of his careless neighbors. Extermination of the pest would require the united efforts of all the bean-growers in the country.

BEAR, v. *bär* [AS. *beran;* Goth. *bairan;* Gael. *beir,* to carry: L. *fĕro;* Gr. *phĕro,* I bear: Sks. *bhri*]: to carry; to support; to suffer; to produce; to bring forth. BORE, pt. *bōr,* or BARE, *bär.* BORN, pp. *bawrn,* brought forth. BORNE, pp. *bōrn,* carried. BEARER, n. *bär′ėr,* one that

carries or brings forth; a messenger; in *her.*, a figure standing on each side of the shield, as if to support it. BEAR'ING, imp. carrying; producing: N. behavior; gesture; the situation of one object with respect to another. BEARINGS, n. plu. a coat of arms; the figures, called charges, on an escutcheon. BEARABLE, a. *bär'ă-bl*, that can be endured. BEAR'ABLY, ad. *-blĭ*. BEARING-BINNACLE, a small binnacle on the fife-rail on the forward part of the poop. BEARING-CHAIR, a chair in which an invalid, a lady, a dignitary, or other person is carried in semi-civilized states of society. BEARING-CLOTH, or BEARING-CLOATH, the cloth or mantle with which a child is usually covered when carried to the church to be baptized, or shown to the godfather and godmother by the nurse. BEARING-NECK, in *mech.*, the journal of a shaft, the part of a shaft which revolves in a journal-box. BEARING-PIER, a pier supporting a structure above it. BEARING-WALL, in *arch.*, a wall supporting a beam somewhere between the ends, and thus rendering it much more secure than it would otherwise be. BEAR WITH, to endure. BEAR UP, not to faint or fail. BEAR OFF, to restrain; to carry away; among *seamen*, to remove to a distance. BEAR DOWN, to overthrow or crush by force; said of a ship endeavoring to reach another, either for a friendly or a hostile purpose. BEAR OUT, to maintain and support to the end. BEAR RULE, to hold office; to rule. BEAR RECORD, to testify; to witness. BEAR THROUGH, to conduct or manage. TO BEAR WITNESS, to give evidence; to witness. BEAR A HAND, among *seamen*, to lend assistance; to be quick. BEAR AWAY, in *nav.*, to change the course of a ship and make her run before the wind. TO BEAR IN HAND, in *OE.*, to amuse with false pretences; to deceive. SHIP'S BEARINGS, the position of a ship at sea with reference to one or two fixed objects whose positions are visible.—SYN. of 'bear, v.': to yield; afford; produce; carry; convey; transport; bring; fetch; suffer; endure; support;—of 'bearing, n.': gesture; behavior; mien; deportment; tendency; direction; relation; influence.

BEAR, n. *bär* [AS. *bera;* Ger. *bär;* Icel. *biörn;* L. *fera*, a wild beast]: a wild animal covered with rough, shaggy fur; name of two constellations—the 'Ursa Major' and the 'Ursa Minor'; a name applied to a speculative jobber on the stock exchange (see BULL); any rough or ill-behaved person. BEARISH, a. *bär'ĭsh*, rude; violent in conduct. BEAR'WARD, n. *-wawrd* [Eng. *bear; ward*]: a keeper of a bear or bears; a protector of a bear; a bearherd; one who takes charge of a human bear; the star Arcturus, fancifully supposed to follow Ursa Major, the Great Bear, and look after its safety. This notion may be found in Sanskrit, Greek, Latin, and other languages. BEAR-BAITING, the sport or diversion of causing dogs to fight with a bear. BEAR'S GREASE, the fat or tallow of a bear, extensively used as a pomatum, though most of the pomades sold under this name are composed of other fats. See HAIR. BEAR-GARDEN, a place where bears are kept for sport; a place

full of confusion, noise, and quarrels. BEAR-BERRY, the *Ar'bŭtus uva-ursī*, or *Arctostăph'ylos uva-ursī*, ord. *Erĭcācĕæ*, a heath plant, bearing baccate fruit; also called BEAR'S-WHORTLE-BERRY. BEAR-BIND; the *Convol'vŭlus sēpĭŭm*. or *Calestēgĭă sēpĭŭm*, ord. *Convol'vŭlācĕæ*, a climbing plant. BEAR'S-BREECH, the genus *Acan'thus*, ord. *Ac'anthācĕæ*, coarse but stately herbaceous plants. BEAR'S-EAR, the *Prīmŭla auric'ŭla*, ord. *Primŭlācĕæ*, a plant producing a yellow flower, from which all the fine forms of the Auricula are derived. BEAR'S FOOT, the *Hellĕb'ŏrus fœtĭdus*, ord. *Ranunculācĕæ*, a handsome plant with numerous flowers. BEAR-FLY, an insect. BEAR-MELL, n. a mallet for beating the hulls off barley. BEAR-SKIN, n. the skin of a bear; a shaggy kind of woolen cloth used for overcoats. BEARSTANE, n. a hollow stone, anciently used for removing the husks of bear or barley.

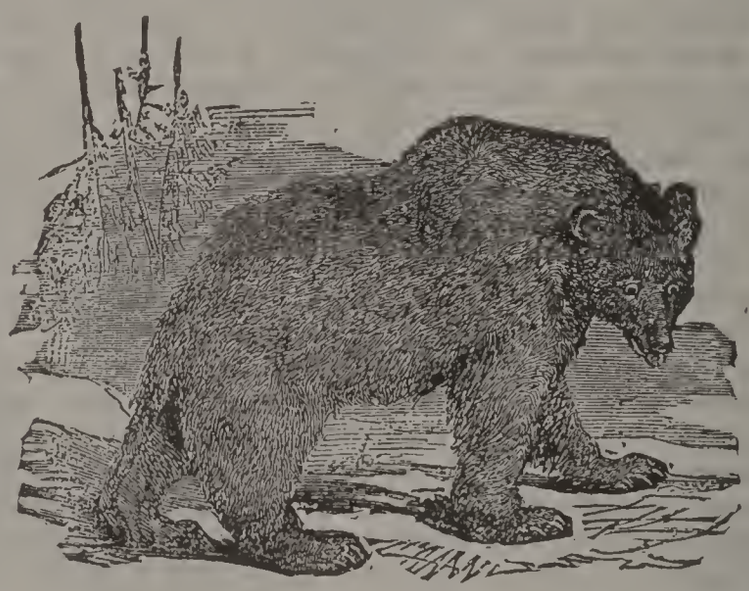
BEAR (*Ursus*): genus of quadrupeds, the type of a family called *Ursidæ* (allied to raccoons, badgers, etc.), order *Carnivora*, tribe *Plantigrada*. In the Ursidæ, formerly were included not only the true bears, but also badgers, gluttons, and wolverines, raccoons, coatimondis, binturongs, the kinkajou, the panda, etc. (See these articles.) Walking on the whole sole of the foot (plantigrade), the animals of this family are not, in general, capable of running very swiftly; and the nearly equal length of their fore and hind legs unfits them for leaping, most of them are also heavy both in form and gait. But while thus deficient in the powers of other carnivorous animals for obtaining prey, they exhibit the same mutual adaptation of endowments and wants; they are, in fact, not strictly carnivorous; no animals are more thoroughly omnivorous than some of them; while others, even of the true bears, always give a decided preference to vegetable food when it can be obtained, and their teeth and digestive organs are in exact accordance with such tastes. Their jaws are much more elongated than those of feline animals, and their bite proportionally less powerful, although some of the bears are still very formidable from their great general strength and the size of their canine teeth. Their claws are not retractile, and are adapted for digging in the earth, or for climbing trees, rather than for seizing prey. All animals of the family have five toes to each, both of the fore and hind feet.

Bears have six cutting teeth above, and six below, one canine tooth on each side in each jaw, with four false molars and two molars (or grinders) on each side above, and four false molars and three molars below. The false molars are, in general, soon lost by the more carnivorous species. The true molars are very large and tuberculous, the false molars, comparatively small. The tuberculous crowns of the molars exhibit the adaptation to vegetable food.—The tail in all species of B. is very short, so that some of them almost appear tailless. Most of them are nocturnal in their habits.

Bears are found in Europe, Asia, and N. and S. America, and both in warm and cold climates, the species belong-

ing to cold climates being in general the most fierce and carnivorous. The ancients mention them as occurring in Africa; it seems strange that no recent accounts make certain the existence of any species in that continent. Nor is any known to belong to Australia.

The common B. of Europe, or Brown B. (*Ursus Arctos*), was at one time a native of the British islands. Bears were carried from Britain to Rome, for the cruel sports in which the Romans delighted, and they certainly were not exterminated in Scotland before the latter part of the 11th c. The Brown B. is usually about four ft. long, and two and a half ft. high. Its claws are about two inches long, and much curved. It has a convex forehead, and generally a brown fur, somewhat woolly in the younger animals, but becoming smoother with age. It produces from one to three young ones at a birth, which remain blind for about four weeks. It is generally believed to be the only



Brown Bear.

European species, although different varieties occur; and one, the Black B., has been regarded by some naturalists as specifically distinct. The common B. is very widely distributed over the whole of Europe and of the n. of Asia, Japan, and was formerly deemed identical with the American Brown or Black B. It is a solitary animal, and generally inhabits mountainous regions or thick forests. It sometimes preys on lambs, kids, etc.; is fond of fish, which in some countries, as in Kamtchatka, constitute a great part of its food; climbs trees in quest of honey, eats also fruits and vegetables, and in confinement has a strong appetite for bread. It usually prefers vegetable to animal food. The skin is valued for making fur-cloaks, etc.; the flesh is used as food, often in the shape of hams, as is that of the American Black B.; the paws are esteemed a delicacy. The fat (bear's grease) is in great request as an unguent for the hair. The intestines are used in Kam-

tchatka, instead of glass, for windows. To the people of Kamtchatka, indeed, bears, which are very abundant, afford many of the necessaries and comforts of life.—The common B., like others of the genus, in cold climates usually spends the winter in a torpid state. It selects a cavern or the hollow of a tree for its hybernation, or makes a hole for itself by digging; it is also said, but this needs confirmation, sometimes to construct a sort of hut with branches of trees, lined with moss. The winter being spent without food, it is said to be very lean on the return of spring. This and other species of B. are very often killed in their winter dens.

The American Black B. (*Ursus Americanus*) has varieties brown and cinnamon. Its total length seldom exceeds 5 ft. The fur is soft and smooth, and generally of a glossy black; but there are varieties of other colors, as the Cinnamon B., the yellow B., etc. The American Black B. is usually timid; seldom attacks man; feeds chiefly on

Polar Bear.

berries, when they can be obtained; occasionally visits gardens for the sake of cabbages and other vegetables; and strongly prefers vegetable to animal food, but has recourse to the latter when pressed by hunger, and in such circumstances occasionally approaches human habitations and captures pigs, which it endeavors to carry off. In such cases the B. walks on its hind-legs, the pig being firmly squeezed between its fore-paws and breast, making a noise which frequently leads to a rescue. This and other species of B., when assailed, not unfrequently hug their adversaries in the manner here described; and their strength renders this hug very dangerous. The skin of the American Black B. is used for caps, rugs, etc., and great numbers are annually killed upon this account, chiefly by the Indians in the employment of the Hudson's Bay Company. The Grizzly B. (*U. ferox*, now *horribilis*), found chiefly on the Rocky Mountains and the plains to the e. of them, from Mexico to lat. 61° n., is much larger than either of the species already noticed, and much more

fierce and carnivorous. It sometimes measures more than 9 ft. from nose to tail, and the claws of the fore-feet more than 6 inches in length. It has a lengthened and narrowed muzzle, a very short tail, and long grizzled hair. No animal of the new world is more formidable than the Grizzly B. It is capable of overpowering the bison, and dragging away the huge carcass. It feeds, however, also on fruits and roots.—The Arctic B., or Polar B., also called the White B. (*U. maritimus*), resembles this species in size and fierceness, but is very distinctly characterized by its flat head and comparatively long neck. It has a smooth white fur. It is the only known species of B. strictly marine in its habits, never being found far from the sea. It inhabits the most northerly shores of Asia and America, Spitzbergen, etc., where it pursues seals, both in the water and upon the ice, and preys upon fishes, birds, etc. Among the articles of its food are eggs and berries in their season, and in confinement it will subsist long on

Syrian Bear.

bread and other vegetable food. Like other species of the genus, it displays great affection for its young, and will brave all dangers in their defense.—Of other species of B., the Syrian B. (*U. Syriacus*) may be mentioned, as perhaps the species particularly intended by the name B. in the Old Testament. It is generally of a dingy-white or brown color, and has a stiff mane of erect hairs between the shoulders. Flocks are not safe from it, yet it more frequently commits ravages on crops of pulse. In its habits generally, it much resembles the common B.; as do also the Tibet B. (*U. Tibetanus*), and the Spectacled B. (*U. ornatus*), so called from semicircular yellow marks above its eyes, a native of the Andes of Chili.—The Long-lipped B., or Sloth B. (*U. labiatus*), of the East Indies, is the kind commonly led about by Indian jugglers. Its long hair, short limbs, high back, peculiarly uncouth appearance, and gentleness of disposition, recommend it for this purpose. In a wild state, it is said to feed chiefly on fruits, honey, and ants. It possesses in a remarkable degree the power, common in some measure to all the bears, of protruding the lips in order to lay hold of food.—Some other East Indian species, which feed chiefly

on fruits and honey, are known as Sun-bears, as the Malayan B. (*U. Malayanus*) and the Bornean B. (*U. Euryspilus*). They are characterized by an extremely long extensile tongue. They are of gentle disposition, and become very affectionate when tamed. This species in a wild state does much damage to cocoa-nut plantations, by climbing the trees, and eating off the terminal bud, when it is said also to drink the sap (toddy) which flows out in abundance.

Remains of several extinct species of B. have been discovered in caves in Germany, England, and other countries, some of which appear to have been larger than the present bears of Europe, and of more decided carnivorous propensities. Of these, the *U. spelæus*, or Great Cavern B., has the skull of considerable vertical elevation from the upper end of the muzzle, and larger than that of the biggest Brown B. The *U. Arctoideus* has a skull nearly of the configuration of that of the *U. Americanus*, and of the size of that of *U. spelæus*. The *U. priscus*, or Ancient B., has the skull of a smaller size, and differing less from that of living bears.

Ant-bear, or Great Ant-eater: see Ant-eater.

BEAR, Bere, or Beer: see Barley.

BEAR, Great and Little: see Ursa Major and Minor.

BEAR River: rises in n. Utah, flows into Ida., and abruptly winds back into Utah, entering the Great Salt Lake 25 m. n. w. of Ogden. Though over 400 m. long, the shortest distance from source to mouth is about 90 m. It is unnavigable, and flows through a narrow valley, in the midst of rugged mountains. Coal beds and mineral springs are found on its banks.

BEAR-BAITING: cruel diversion of causing dogs to fight with a bear; formerly common in various countries. In England, B. was one of the established amusements, not only among the common people, but among nobles, and even royal persons; it is related that Queen Elizabeth did not consider it unbefitting her sex or rank to attend these rude entertainments. The places where bears were kept and publicly baited were called bear-gardens. There is a spot in the neighborhood of the court at Westminster, which, until lately, was known as the Bear-garden. B., like bull and badger-baiting, has long ceased as a public amusement.

BEAR'BERRY: see Arbutus.

BEARD, n. *bērd* [Ger. *bart;* Dut. *baard;* Russ. *boroda;* W. *barf;* L. *barba*, a beard; Icel. *bard*, a lip or border]: hair that grows on the lips and chin of a man; the awn of corn; the gills of oysters and other shell-fish: V. to seize by the beard in contempt or anger; to set at defiance; to oppose at close quarters, or openly; to oppose face to face: in *carp.*, to chip or plane away timber, so as to reduce the concavity of a curve; to modify a straight line. Bearding, imp. *bērd'ing*. Bearded, pp. *bērd'ĕd*. Beard'less, a. with-

out a beard; young. BEARD'LESSNESS, n. the state or quality of being destitute of a beard. BEARDLET, n. in *bot.*, a little beard. BEARDLETTED, a. in *bot.*, furnished with small awns, as *Cinna arundinacea*. BEARD-GRASS, n. the English name of Polypogon, a genus of grasses. BEARD-TREE, n. the hazel (q. v.) tree. BEARDING-LINE, n. in *ship-building*, a curved line made by bearding the deadwood to the shape of the ship's body.

BEARD: the hair which grows on the upper lip, and on the chin and cheeks of the male sex. It is usually, though not always, of the same color as the hair of the head, but somewhat shorter, stronger, and more wiry; it is invariably the color of the hair on the eyebrows. The B. is the distinctive sign of manhood. In women, an incipient B. sometimes appears in the later years of life. Instances occur of women with a B. almost equal to that of the male sex, but these are recorded as prodigies. The B. is generally luxuriant in persons of the Slavic and Celtic races. In early times, the B. was considered by almost all nations a sign of strength and an ornament of manhood, was carefully cherished and even regarded as sacred. A neglected B. was a sign of mourning among the Jews. In Greece, the B. was universally worn till the time of Alexander the Great, who ordered shaving, that the beards of his soldiers might not be laid hold of by their enemies in battle. Shaving was introduced among the Romans about B. C. 300. Under Hadrian, the B. was allowed to grow again: and this fashion prevailed till the time of Constantine the Great, when it was discontinued. Peter the Great compelled shaving in Russia by imposing a heavy tax upon the B. The B. was commonly worn in France till the time of Louis XIII., when, because the monarch was young and beardless, the fashion changed at the court and throughout the kingdom. A similar change took place in Spain on the accession of Philip V. The Anglo-Saxons wore beards for a considerable time after their invasion of Britain; and the B. appears to have been general among the people at the time of the Norman Conquest. But the Normans not only shaved themselves, but compelled the conquered to do so likewise. It would appear, however, from the sculptured representations on the tombs of kings and nobles, that not very long after the Conquest some of the Normans adopted the custom they had prohibited among the vanquished. Edward III. is represented on his tomb in Westminster Abbey with a very long beard. In the time of Elizabeth, beards were of the most varied and fantastic cut.

The B. gradually declined under Charles I.; in the reign of Charles II., whiskers and moustaches only were worn, and the practice of shaving the whole face soon became general all over Europe, and it only is within the 19th c. that the B. has been in some measure restored, the soldiers of Bonaparte setting the example. But until about the year 1840, the B. was regarded by some govts. of continental Europe as a badge significant of democratic senti-

ments, and as such was interfered with by police regulations. The Brit. soldiers in the Crimean war were allowed to wear their beards. In the Brit. navy the full beard may be worn, but in the army only the mustache. The wearing of the B. has in short, been a matter of fashion in all ages and countries—an extreme in one way usually leading to an extreme in the other. The B. is itself liable to the same diseases with the hair of the head, and to a peculiar disease (*mentagra*) occasioned or kept up by shaving, consisting in a bark-like exudation from the inflamed sebaceous glands of the hair.

BEARD, *bērd*, DANIEL CARTER, American artist and author: b. Cincinnati, Ohio, 1850, June 21. He first engaged in civil engineering and surveying; went to New York in 1878 and studied art, and has since become widely known as a book and magazine illustrator. He founded and became teacher of the department of animal drawing in the Woman's School of Applied Design, believed to be the first class of this character in the world. Besides his illustrative work he has published *Moonlight; Six Feet of Romance; American Boys' Handy Book; American Boy's Book of Sport*, etc.

BEARD, GEORGE MILLER, M. D.: 1839, May 8—1883, Jan. 23; b. Montville, Conn. He studied at Phillips Acad. (Andover), and graduated at Yale 1862, afterward attending the Yale med. dept., and taking his degree at the New York Coll. of Physicians and Surgeons. In 1863–64 he was assist. surgeon on a U. S. gunboat; settled in New York in 1865, and became distinguished as a neurologist, making a specialty of nervous diseases, particularly those arising from the liquor habit. He wrote important monographs on science in its relation to insanity, spiritualism, and delusions; and delivered popular lectures on these and cognate subjects. Among his works were: *Our Home Physician* (1869); *Eating and Drinking* (1871); *Stimulants and Narcotics* (1871); *American Nervousness* (1881); *Sea-Sickness* (1882).

BEARD, *bērd*, JAMES HENRY: artist: 1814–1893, Apr. 4; b. Buffalo, N. Y.; bro. of Wm. H. B. Most of his childhood was spent in Ohio. He lived many years in Cincinnati, where he became famous as a portrait-painter, John Quincy Adams, Henry Clay, and other public men being among his patrons. He removed to New York 1870, and became very successful in animal painting. In 1848 he became an honorary member of the National Acad., and was elected member of that soc. 1872. Amongst his noted works are: *North Carolina Emigrants, Mutual Friend, Don Quixote and Sancho Panza, The Mississippi Flood, Barn-Yard, Blood Will Tell, Heirs at Law, Detected Poacher, Consultation, Which Has Preëmption?* and *'Ll yer gimme some? Say!*

BEARD, RICHARD, D. D.: 1799, Nov. 27—1880, Dec. 2; b. Sumner co., Tenn. His early education was limited; but after careful study for the ministry he was

licensed and began preaching 1820. His health failing, he became a professor of languages (1832) at Cumberland Coll., Princeton, Ky., where he had graduated. He then spent five years in Sharon Coll., Sharon, Miss. 1843-54 he was pres. of Cumberland Coll., but on the establishment of a chair of systematic theology at Cumberland Univ., Lebanon, Tenn., 1854, he was chosen to the position, which he held until his death.

BEARD, William Holbrook, American painter: b. Painesville, Ohio, 1825, April 13, d. New York, 1900, Feb. 20, brother of James H. Beard. He was a traveling portrait painter from 1846 to 1851, when he settled in Buffalo, N. Y. After several years of foreign study and travel he settled in New York in 1860. In 1862 he was elected a member of the National Academy. His works include genre and allegorical pictures, but he was most popular in painting animals, especially bears, whose actions he humanized in a satirical and pleasing manner. He made many studies of decorative architecture. Among his most popular works are: *Power of Death* (1859); *Bears on a Bender* (1862); *Bear Dance* (1865); *March of Silenus* (1866); *Flaw in the Title* (1867); *Darwin Expounding his Theories* and *Runaway Match* (1876); *Divorce Court* (1877); *Bulls and Bears in Wall Street* (1879); *Voices of the Night* (1880); *Spreading the Alarm* (1881); *In the Glen* (1882); *Cattle Upon a Thousand Hills* (1883); *Who's Afraid?* (1884); *His Majesty Receives* and *Office Seekers* (1886), etc. He published *Humor in Animals*, a collection of his sketches (1885).

BEARDSLEE, *bērdz'lĭ*, Lester Anthony: American naval officer: b. Little Falls, N. Y., 1838, Feb. 1; d. near Augusta, Ga., 1903, Nov. 11. Appointed acting-midshipman 1850, March 5, he served in the East Indies in 1851-5, participating in one battle and several skirmishes with the Chinese army at Shanghai. Graduating from the Naval Academy 1856, he passed through all grades of the service to rear-admiral 1895, and was retired 1898, Feb. 1. During the Civil war he commanded the monitor Nantucket in the attack of the ironclad fleet on the defenses of Charlestown Harbor, 1863, April 7, and captured the Confederate steamer Florida at Bahia, Brazil. In 1870 he took the steam-tug Palos to the East Indies, carrying on her the first United States flag through the Suez canal. In 1879-80 he discovered, surveyed, and named Glacier Bay, Alaska. He is the author of a number of valuable official reports, especially those on *The Strength of Metals*, *Resources of Alaska*, and *Present Condition of Affairs in Hawaii* (1897), published as Senate executive documents; *The Strength of Wrought Iron and Chain Cables* (1880).

BEARDSLEY, *bērdz'lĭ*, Aubrey: English author and illustrator: b. Brighton, 1874; d. Mentone, France, 1898, March 16. After receiving a grammar school education, he began working for London periodicals and publishers in 1892; and soon became widely known by his striking

designs for posters and book covers. In 1894 he became art editor of the *Yellow Book*, and while supplying it with illustrations, contributed drawings also to the *Savoy* and *Le Courrier Français*. He illustrated *Bons Mots* (1892); Malory's *La Morte d'Arthur* (1893); Oscar Wilde's *Salome* (1894); *The Rape of the Lock* and *An Album of Fifty Drawings* (1896); and wrote and illustrated *The Story of Venus and Tannhauser* (1895); and a novel, *Under the Hill* (1896).

BEARDSLEY, Eben Edwards: American Episcopal clergyman and writer; b. Stepney, Conn., 1808: d. 1891, Dec. 22. He was for many years rector of St. Thomas's Church at New Haven. He wrote *History of the Episcopal Church in Connecticut* (4th ed. 1883), and lives of *Samuel Johnson, First President of King's College, New York* (1874); *William Samuel Johnson, President of Columbia College* (1876); and *Samuel Seaberry, First Bishop of Connecticut* (1881).

BEARDSLEY, Samuel: American jurist: b. Hoosic, N. Y., 1790, Feb. 9; d. Utica, N. Y., 1860, May 6. On leaving the common school he took up the study of medicine, but abandoned it for law. In 1813 he was a member of the militia that defended Sackett's Harbor. Two years later he was admitted to the bar, and became judge-advocate of the militia. In 1823 he was State senator from the Fifth District of New York. He was appointed attorney for the Northern District of New York by President Jackson, and was a member of Congress in 1831–6 and 1843–5. From 1836 to 1838 he was attorney-general of the State of New York. He became associate judge of the supreme court of New York in 1844, and three years later succeeded Judge Bronson as chief justice. On his retirement he devoted himself to the practice of his profession.

BEARDSTOWN, Ill., a city in Cass co., 45 miles northwest of Springfield, on the Illinois River. The St. Louis division of the Burlington Route has its repair and other shops at Beardstown. There are manufactures of flour, lumber, and window screens as well as important cooperage works. The city has a fine park and two great bridges across the river. It was settled in 1832 and received a city charter in 1896. Pop. (1910) 6,107.

BEARING, of a ship at sea: the direction in which she sails, in reference to the points of the compass. Or, in a more comprehensive sense, it is the direction in which each of two objects is situated in reference to the other. When the latitudes and longitudes of two places are known, their respective bearings from each other can be calculated by trigonometry. On shipboard, seamen often conveniently refer the B. of another ship, or of an object on shore, not to the points of the compass, but relatively to the line followed at the moment by the ship's keel. Thus the B. of the distant object may be *ahead, astern*, on the *starboard bow*, on the *larboard quarter*, etc.; the bow

being between the head and the midship, and the quarter between the midship and the stern.

Bearing, or rather the verb *to bear*, is much used as a technical direction on shipboard. Thus, to 'bear in with the land,' to 'bear off from the land,' to 'bear up,' to 'bear away,' etc., are nearly equivalent to sailing, or steaming, or steering, in such and such directions.

BEARING, n. in *arch.*, the clear span of horizontal beam between its supports; the suspended portion of such a beam, also of an arch. In *mech.*, that which supports a moving part, as a journal, also the moving part that comes in contact with the support; in the plural applied mainly to those contrivances employed for reducing friction between a moving part (as the end of a rotating shaft) and its support (as a hole in framework). The simplest form of B. is a circular hole, sometimes called a cylindrical B., and when this is in cast iron, a steel shaft may be rotated therein if it does not bear heavily or turn fast. In such case the cast iron surface tends to pack and gets smoother with wear, instead of being rough. A steel shaft run in a wrought iron or wrought steel B. would tend to cut opposing surfaces, and thus wear out quickly. A common form of B. makes use of semi-cylindrical boxes in the hole, these being filled with Babbitt metal (q. v.), which is soft and packs instead of inviting cutting. Instead of babbitting, a composition in which graphite is included is used to advantage in some light bearings. The B. of watches are made of rubies or other hard jewels that resist wear. A B. that reduces friction (but is suited only to comparatively light weights) is a cone or circular point, as in the tailstock of a lathe. The two most common machine B. are the *ball*-B. and *roller*-B. These operate on the principle of substituting rolling friction for sliding friction. A shaft turning on a plain journal requires to be lubricated, usually with oil, to reduce the friction of the surfaces that rub or slide on each other. If the speed and weight are such as to produce much heat, the oil may dry up, and there results a 'hot box.' A ball or roller-B. requires no oil, as the surfaces do not (or should not) rub, but roll on each other. The balls are placed in a ring, or there may be several rings in a B., and in the best constructions each ball bears at two points against the inner surface and two points on the other surface. If the balls bear only at one point on each opposed side, they tend to cause a groove by pressure along that circular line; if they bear at more than two points on each surface they produce rubbing friction. It is apparent that with a ring of balls some of them will sometimes come in contact, and invite rubbing on the ball surfaces that move oppositely. To obviate this, the Chapman ball-B. introduces small idler balls between every ball that works on the bearings, thus keeping apart the balls that carry the load. Balls for B. are made of hardened steel, and have become very cheap, while retaining their accuracy of form. They are employed in a

vast number of machines and constructions, including the axle B. of automobiles, bicycles and most high-grade vehicles. The *roller*-B. is adapted to heavier work than the ball-B. It operates similarly, a ring of rollers being placed between the bearing surfaces. A *side* B. or *end* B. is one that reduces friction on the side or end, as the side of a wheel-hub, or the end of a rotating shaft. *Wheel* B. are employed chiefly to reduce friction of flat surfaces, as in the case of a heavy bed that is supported at regular intervals by a series of wheels on which it may run back and forth. They are used on some printing presses, though roller-B. are more common. An *eccentric* B. is a journal-box with its bearing slightly out of the center of the cavity in which it rests, so that the box may be shifted by turning, thus taking up wear. A *liquid* B. is one in which water is introduced under pressure to afford a smooth lubricated surface. A *plain* B. is one having no anti-friction devices. BEARING-METAL, n. Babbitt metal. See BABBITT. BEARING-NECK, n. the part of a shaft that is a bearing; a shaft journal. BEARING PARTITION, a partition in a building that carries the weight of that which is above. BEARING-PILE, n. a pile driven in soft ground to furnish support for a structure. See PILE. BEARING-SPRING, n. the bolster that connects with the axle of a logging-car.

BEAR LAKE, GREAT: in British America, n. lat. 65°–67°, w. long. 117°–123°; the most northerly of that chain of fresh water seas—Huron, Superior, Winnipeg, Athabasca, Great Slave, Great Bear—which mark a continuous hollow in the middle of the continent. Great Bear Lake is irregular in shape, with a surface estimated at 7,000 sq. m. It sends forth a river of its own name to the Mackenzie. Its height above the ocean is computed at 230 feet.

BÉARN, *bā-ar′:* formerly one of the 32 provinces into which France was divided; now forming the greatest portion of the Basses-Pyrénées. B. was a portion of Aquitania under the Romans, and after the downfall of that empire, under its ruling dukes it was a country of considerable importance. From the intermarriage of the ruling family, the Counts of Foix, with that of Navarre, sprang the French monarch Henry IV., who, because he was born and brought up in B., was derisively called the Bearnois. When he ascended the throne of France, it, of course, virtually became a part of that country; but was only formally incorporated with it, 1620, by Louis XIII.

BEAS, *bē′ȧs:* anciently *Hyphasis:* one of the five rivers which gave name to the *Punjab,* or land of five waters—Jelum, Chenab, Ravee, Beas, and Sutlej. It rises on the verge of the Ritanka Pass of the Himalaya, lat. 32° 34′ n., long. 77° 12′ e., its source being 13,200 ft. above the sea-level. After a course of about 290 m. it joins the Sutlej, 35 m. to the s. s. e. of Amritsir.

BEAST, n. *bēst* [Gael. *biast;* Dut. *beest;* L. *bestĭā,* a beast:

F. *bête;* OF. *beste,* a beast]: any four-footed animal; a person rude, coarse, and filthy. BEAST'LY, a. *-lĭ,* like a beast. BEAST'LINESS, n. *-lĭ-nĕs,* great coarseness; filthiness. BESTIAL, a. *bĕst'yăl,* pertaining to a beast, or having the qualities of one. See BESTIAL. BEAST-LIKE, a. resembling a beast. BEAST-FLY, n. a gadfly. BEAST-MILK, n. the first milk given by a cow after calving.—SYN. of 'beastly': brutish; brutal; bestial; coarse; filthy.

BEAT, v. *bēt* [AS. *beatan;* Icel. *bauta;* It. *battere;* F. *battre,* to beat or strike (see BATTER)]: to knock; to strike; to strike repeatedly; to crush or mix by blows; to overcome in a fight, contest, or competition; to throb like the pulse: N. a stroke; a throb; the rise or fall of the hand or foot to mark the time in music. BEATS, n. plu., rhythmic sound-waves formed when two notes not in unison are sounded together. BEATING, imp. BEATEN, pp. *bēt'n:* ADJ. made firm and smooth by treading; made common by use. BEAT'ER, n. one who; a beating contrivance. BEAT OF DRUM, a succession of beats on a drum varied for particular purposes, as to call to arms or quarters. TO BEAT ABOUT, to search diligently for. TO BEAT DOWN, to decry; to lower the price. TO BEAT HOLLOW, to defeat thoroughly. BEAT ABOUT THE BUSH, not coming directly to the point, but feeling the way indirectly. TO BEAT OFF, to drive back. TO BEAT TIME, to regulate time by the measured motion of the hand or foot. TO BEAT OUT, to extend by hammering. TO BEAT THE GENERALE, to give notice to soldiers to march. TO BEAT THE TATTOO, to give notice to soldiers to retire to quarters. TO BEAT TO ARMS, to summon soldiers to get ready their arms and prepare for battle. TO BEAT A PARLEY, to give a signal to an enemy for a conference. TO BEAT UP, to attack suddenly, as an enemy's quarters; to sail against the wind by alternate tacks. TO BEAT UP FOR, to go diligently about in order to procure. DEAD BEAT, so completely vanquished as to have no heart or life for a further contest. TO BEAT A RETREAT, to retire from the contest. BEATING ORDERS, authority issued to a recruiting party to enlist men for the army. WITHOUT BEAT OF DRUMS, without ostentation; quietly. POLICE'MAN'S BEAT, district or limit to be walked over and watched by a policeman. BEATER UP, one who searches for and starts game for a sportsman. BEATING-ENGINE, in *paper manuf.,* an engine for cutting rags to pieces that they may be converted into pulp. It consists of two concentric cylinders, the outer one hollow, each armed with knives to operate as they revolve in opposite directions; in *cotton manuf.,* the same as BEATING-MACHINE, a machine for opening, loosening, and cleaning cotton from dust or other rubbish before beginning its manufacture; called also a *scutcher,* a *willower,* an *opener,* a *wolf,* a *devil* (*Knight's Dic. of Mechanics*).—SYN. of 'beat, v.': to strike; hit; defeat; vanquish; overcome; conquer; overpower; overthrow; rout; pound; bang; buffet; bray; bruise; break; maul; pommel; thrash; thwack; baste; thump.

BEATIFICA'TION: a solemn act in the Rom. Cath. Church, by which the pope, after scrutinizing the life and services of a deceased person, pronounces him blessed. After this he may be venerated in a specified portion of the church, and the act holds out the prospect of future canonization, which exalts him to the place of a saint in the church universal. B. was introduced in the 12th c. It may be regarded as an inferior degree of canonization (q.v).

BEATIFY, v. *bē-ăt'ĭ-fī* [F. *beatifier*—from L. *bĕātus*, happy; *fiō*, to make]: to make happy; to bless with complete enjoyment in heaven. BEAT'IFYING, imp. BEAT'IFIED, pp. *-fīd*. BEATIFIC, a. *bē'a-tĭf'ik*, or BE'ATIF'ICAL, a. *-ĭ-kăl*, that has the power to make happy. BE'ATIF'ICALLY, ad. *-lĭ*. BEATIFICATION, n. *bē-ăt'ĭ-fĭ-kā'shŭn*, in the *R. Cath. Ch.*, the pronouncing of a deceased person to be blessed; the first step towards canonization. BEATITUDE, n. *bē-ăt'ĭ-tūd* [F.—L.]: happiness of the highest kind. THE BEATITUDES, n. plu., the blessedness pronounced by our Lord on the exercise of the virtues, Matt. v.

BEATING AND WOUNDING (or simply *wounding*): name sometimes found in law-books for the offense of inflicting on another some dangerous hurt or wound; and it has otherwise been described as an aggravated species of Assault and Battery. See ASSAULT. A still more aggravated and atrocious offense of this kind used to appear in the list of offenses against the criminal law of England under the term MAYHEM, which was violently depriving another of the use of a member proper for his defense, such as an arm, a leg, a finger, an eye, a fore-tooth, and some others; but it was laid down quaintly, that the loss of one of the jaw-teeth, the ear, or the nose, was no mayhem in common law, because these members can be of no use in fighting.

BEATING THE BOUNDS: popular expression in England for those periodical surveys or perambulations by which the ancient boundaries of parishes are preserved: the correct legal term is *Perambulation* (q. v.). The procedure, according to common custom, is in this wise: On Ascension Day, the clergyman of the parish, with the parochial officers and other parishioners, followed by the boys of the parish school, headed by their master, go in procession to the different parish boundaries, which boundaries the boys strike with peeled willow-wands that they bear in their hands, and hence the expression beating the bounds.

BEAT OF DRUM, in Military Matters: a signal or instruction conveyed by a particular mode of drum-beating. It is an audible semaphore, a telegraph that speaks to the ear instead of the eye. There are many varieties, known by the names of the generale, the reveillé, the assembly, the foot-march, the grenadier's march, the retreat, the taptoo or tattoo, the call to arms, the call to church, the pioneers' call, the sergeants' call, the drum-

mers' call, the chamade, the rogue's march, the long roll, etc. Some of the same instructions or commands are also given by the bugle, and some by the trumpet.

BEATON or BETHUNE, *bē'tŭn*, DAVID, Cardinal and Primate of Scotland: 1494–1546, May 29; a younger son of John Beaton of Balfour, Fifeshire; descended from a celebrated French family: zealous opponent of the Reformation. B. studied at the Univ. of St. Andrews; and afterwards theology and the canon and civil laws at Paris; and was preferred by his uncle, James Beaton, Abp. of Glasgow, to the rectory of Campsie, Stirlingshire. His tact and general abilities recommended him to the Duke of Albany, regent during the minority of James V., who, 1519, appointed him resident for Scotland at the French court. In 1525, he took his seat in the Scots parliament as Abbot of Arbroath. In 1528, B. was appointed Lord Privy Seal, and is said to have been the adviser of James V. in instituting the College of Justice or Court of Session in Scotland, the idea of which was suggested by the constitution of the parliament of Paris. B. subsequently became Prothonotary Public, and was twice sent ambassador to France, to negotiate James's two marriages —first, with the French king's daughter, Princess Magdalene, who died six months after her nuptials; and secondly, with Mary, Duchess of Longueville, daughter of the Duke of Guise. The king's union with the latter he solemnized, 1537, in the cathedral church of St. Andrews. During his residence at the French court, he was admitted to all the privileges of a French citizen, and appointed by Francis I. Bishop of Mirepoix in Languedoc. After his return, he became coadjutor to his uncle in the see of St. Andrews, and, 1538, Dec. 28, on the recommendation of the king of France, was, by Pope Paul III., elevated to the dignity of a cardinal. On his uncle's death, 1539, he succeeded him as Abp. of St. Andrews and Primate of Scotland, and soon commenced a furious persecution of the Reformers, already numerous and increasing. That he might be invested with supreme authority in all matters ecclesiastical, he obtained from the pope the appointment of *legatus a latere* in Scotland, and induced the king to institute a court of inquisition, to inquire after heretics in all parts of the kingdom. To maintain the French influence, and prevent all danger to the Rom. Cath. Church in Scotland by a friendly connection with England, he contrived to frustrate a proposed meeting of King James with his uncle, Henry VIII, and even prevailed on the former to declare war against his royal relative. On the death of James, after the distastrous overthrow of the Scots at Solway Moss, 1542, Dec. 14, B. produced a forged will of the late king, appointing himself, with three others, regents of the kingdom during the minority of the infant Queen Mary. The nobility, however, rejected the fictitious document, and elected the Earl of Arran regent, who then professed the reformed faith. The following month, B.

was arrested and imprisoned, accused, among other charges, of a design to introduce French troops into Scotland, in order to stop the negotiations then in progress with Henry of England for a marriage between the young Prince of Wales, afterwards Edward VI., and the infant Queen of Scots. He was soon after liberated, and reconciled to the regent, whom he induced to abandon the English interest, and publicly to abjure the reformed religion. On the young queen's coronation, 1543, B. was again admitted of the council, and appointed chancellor. He now renewed his persecution of the Reformers; and, 1546, Jan., accompanied by the regent, he made a diocesan visitation of the counties under his jurisdiction, and punished with the utmost severity all Protestants that he could find. At Perth, a number of persons, accused of heresy, were banished the city, others were imprisoned; three men were cruelly hanged, and one woman drowned, by his directions. During a provincial council of the clergy held at Edinburgh, at which he presided, he caused the celebrated evangelical preacher, George Wishart, to be apprehended, and conveyed to the castle of St. Andrews, where he was burnt at the stake, B. and other prelates witnessing his sufferings from a window. A conspiracy having been formed against him, at the head of which were Norman Leslie and his brother, B. was assassinated in his own castle of St. Andrews. Though endowed with great talents, B. had little learning. He is said, however, to have written *Memoirs* of his own embassies: a treatise on *St. Peter's Supremacy;* and *Letters to Several Persons*, of which Dempster observes there are several copies extant in the Imperial Library at Paris. Haughty, cruel, and intolerant, he was also licentious in the extreme. He had six natural children, three sons and three daughters—the latter married into families of distinction. One of his sons became a Protestant. His death was scarcely lamented by any party in the state.

BEATRICE, *bē'ă-trĭs:* city, cap. of Gage co., Neb.; on the Big Blue river, and on the Burlington and Missouri River, the Chicago, Kansas and Nebraska, and the Union Pacific railroads; 40 m. s. of Lincoln, 90 m. s.s.w. of Omaha. It has excellent water-power; Holly system of water-works; gas and electric light plants; telephonic communication with all important places in the state; street railroads, national banks, investment and loan companies, etc. The state institution for feeble-minded children is at B. There are many churches and church organizations, several large public school buildings, a public park, and several newspapers. The industries comprise pump and wind-mill factory; oatmeal, flour, paper, and starch mills, brick, tile, and cement works; canning factory; and magnesian limestone quarries of excellent building stone. The manufacture of jack-screws is a special industry. Pop. (1880) 2,447; (1890) 3,836; (1900) 7,875; (1910) 9,356.

BEATRIX, n. *bĕ-ā'trĭks* [L.L., from class. L. *beata*, fem.

of *beatus*, happy; *beo*, to bless]: an asteroid, the 83d found; discovered by De Gasparis, at Naples, 1865, April 26.

BEATS, n. the pulsating or fluctuating sound produced by the concurrence of two or more periodic vibrations of the air. Vibrations that differ but slightly in their periods (*e. g.*, 300 and 301 in the second) give rise to slow beats of gradual and regularly recurring change of intensity. With a somewhat greater difference in rate, the beats become more rapid and more discrete. If the difference is made sufficiently wide, the beats either disappear or remain as mere roughnesses in the generating tones. Beats may, according as the physical conditions are varied, be carried by a single tone or by the two tones which correspond in pitch to the two generating rates of vibration. These rates are usually similar, and their difference equals, with rare exceptions, the number of beats in unit time. Beats arise by the mutual and periodic interference of the physical tones. They are probably mediated, in the ear, by fibres of the basilar membrane (see EAR) which are simultaneously affected by different vibratory periods.

BEATTIE, *bē'tĭ*, FRANCIS ROBERT, Canadian-American educator: b. near Guelph, Ontario, 1848, March 31. He was educated at Toronto University, studied theology at Knox College, Toronto, and at the Presbyterian College in Montreal. He was pastor at Baltimore and Cold Springs, Ontario, in 1878–82, and at Brantford in 1882–8. In 1888 he became professor of apologetics in the Persbyterian Theological Seminary in Columbia, S. C., where he remained till 1893, and then accepted the chair of systematic theology and apologetics in the Presbyterian Theological Seminary, Louisville, Ky. His writings include *An Examination of Utilitarianism* (1884); *Methods of Theism* (1887); *The Higher Criticism or Modern Critical Theories* (1888); *Radical Criticism, an Exposition and Examination of the Radical Critical Theory of the Old Testament Scripture* (1895); *Presbyterian Standards* (1896); *Apologetics* (1903); *Calvinian and Modern Thought* (1901); *Christianity and Modern Evolution* (1903); etc. Died 1906.

BEATTIE, *bē'tĭ*, Scot. *bā'tĭ*, JAMES: 1735, Oct. 25—1803, Aug. 18; b. Laurencekirk, Scotland: poet. He gained reputation as a classical scholar as Marischal College, Aberdeen; was appointed master of a grammar school there 1758, and prof. of moral philosophy in Marischal College 1760; and published his famous *Essay on Truth* 1770. In 1771 he brought out the first part of *The Minstrel*, 1774 the second part; 1776 published essays on *Poetry, Music*, etc.; 1783 *Dissertations, Moral and Critical;* 1786 *The Evidences of the Christian Religion, briefly and plainly stated;* and 1790–93 *The Elements of Moral Science*. He declined preferments in the Established Church, attacking the skeptical philosophy of Hume and defending the so-called 'Common-Sense philosophy.'

BEAT TONE, n. [Ger. *stosston*; Fr. *son de battement*]: a term applied by R. König to certain derivative sounds produced, under experimental conditions, by two tones

of different vibration rate. K. distinguished *lower* and *upper* beats (see BEATS) and corresponding beat tones. When the generating tones lie within the interval of the octave, the following formulas represent the pitch numbers of the beat tones: *lower* $= n - m$ and *upper* $= 2m - n$, where m is the rate of the lower and n that of the higher generator. K. referred beat tones and beats to a like origin, *viz.*, periodic interferences in the vibratory movements of the air. It is probable that most, if not all, beat tones may be considered as difference tones (q.v).

BEATTY, *bē'tĭ*, JOHN, American military officer; b. Sandusky, Ohio, 1828, Sept. 16. He fought on the Union side in the Civil War, rising from private to brigadier-general, and showing intrepid courage at Stone River, 1862–3. He was a member of Congress in 1868–74, and Republican presidential elector-at-large in 1884. He has written *The Citizen Soldier; or, Memoirs of a Volunteer* (1876); *The Belle o' Becket's Lane* (1882); *High Tariff or Low Tariff, Which?* (1894); *The Acolhuans* (1902); *McLean: a Romance of the War* (1904); etc.

BEAU, n. *bō* [F. *beau;* OF. *bel*, good, fair—from L. *bellus*, gay, handsome]: a gay man who attends much to dress; in *familiar language*, a man who pays attention to a lady; a lover. BEAUX, n. plu. *bōz*. BEAUISH, a. *bō'ĭsh*, like a beau; foppish. BEAUCLERC, a. *bō'klârk* [F. *beau*, good; *clerc*, a priest, a scholar]: applied to Henry I., who possessed an amount of learning very rare in those times among any but the clergy. BEAU-ESPRIT, n. *bō'ĕs-prē* [F.]: a man of wit. BEAU-IDEAL, n. *bō'ĭ-dē'ăl* [F. *beau; ideal*, imaginary]: an imaginary standard of absolute perfection; a model of excellence in the mind of fancy. BEAU-MONDE, n. *bō-mōngd'* [F. *beau*, good, fair; *monde*, the world]: polite people; the fashionable world.

BEAUCAIRE, *bō-kār':* well-built commercial town of France, on the right bank of the Rhone, dept. of Gard, opposite Tarascon, with which it is connected by a magnificent suspension bridge. The harbor is commodious for vessels, which enter it by a canal communicating with the Mediterranean, and avoiding the sand-banks at the mouths of the Rhone. The main feature of B. is its great annual fair, established 1217 by Count Raymond of Toulouse. It begins July 15, and lasts 6 days. In former times, when this fair was free from duties, it was attended by merchants and manufacturers from almost all parts of Europe, from the Levant, and even from Persia and Armenia; and as the small town could not contain the vast concourse of traders, thousands of wooden huts and of tents were erected in the neighboring valley. But the numerous imposts demanded since 1632, foreign wars, and the competition of Marseille, Lyon, and other large places, reduced the traffic of B., which sank still lower in the days of the Revolution. The chief articles of commerce are silks, wines, oil, almonds, and other fruits, spices, drugs, leather, wool, and cotton. Pop. abt. 9,000.

BEAUCHAMP, *bō-shŏng'*, ALPHONSE DE: 1767-1832, June 4; b. Monaco: French historian and publicist. He was educated in Paris, and entered the Sardinian military service. At the outbreak of the war with France, he refused to bear arms against the republic, and obtained his discharge; but being suspected of treasonable designs, he was imprisoned for some months. After his liberation, he returned to Paris, where he took part against Robespierre; and on the establishment of the Directory, obtained a situation in the office of the minister of police, and had the surveillance of the press. Here he commenced his *Histoire de la Vendée et des Chouans* (3 vols., Par. 1806; 4th ed., 1820), for which Fouché supplied the materials. As this work displeased the emperor, B. was banished to Rheims, but was recalled, 1811, and again received a subordinate appointment on condition that he should publish nothing concerning his political contemporaries. Under the Restoration, he received a pension (1820), and wrote for the *Moniteur*, the *Gazette de France*, and the *Biographie des Hommes Vivants*, edited by Michaud. The numerous historical writings of B. are interesting, but bear the impress of party spirit; but in his *Histoire du Brésil* (Par. 1815), and *Histoire de la Conquête du Pérou* (Par. 1807), he found no opportunity of expressing his political partialities. Among his works may be mentioned the *Histoire de la Campagne de* 1814–15 (2 vols., Par. 1818), the *Histoire de la Révolution du Piemont*, directed against De la Rosa (Par. 1823), and *Vie de Louis XVIII.* (Par. 1825). After the July revolution, he was employed on several legitimist journals; and the supposititious *Mémoires* of Fouché (4 vols., Par. 1828–9) have, with good reason, been ascribed to Beauchamp.

BEAUFET, n. *bō'fā:* see BUFFET.

BEAUFORT, *bū'fĕrt:* N.C., city, port of entry and county-seat of Carteret co., at the mouth of Newport river, 167 m. east of Raleigh. The harbor here is the finest in the State. At Cape Lookout, 11 m. to the southeast, is a lighthouse 156 feet high. Pop. (1900) 2,195.

BEAUFORT, S.C., a town and county-seat of Beaufort co.; on the Port Royal River, and the Charleston & W. C. R. R.; 15 miles from the ocean and 80 miles southwest of Charleston. It is midway between Charleston and Savannah; has an excellent harbor, and is the centre of the phosphate trade of the State. It was founded in 1711, and for many years prior to the Civil war was a noted health and pleasure resort, especially for the cotton planters interested in the plantations on the adjoining Sea Islands. It is still a popular summer and winter resort, principally engaged in phosphate mining, and with large exports of cotton, yellow pine and cypress lumber, rice, and sweet potatoes. In the fiscal year ending 1900, June 30, the imports of merchandise here aggregated in value $81,042, and the exports, $181,908. Pop. 4,900.

BEAUFORT, CARDINAL, and Bishop of Winchester;

abt. 1370–1447; natural son of John of Gaunt, Duke of Lancaster; half-brother to King Henry IV. He was educated in England and Germany, and in 1404 became B. of Winchester. He repeatedly filled the office of lord chancellor and was involved in all the most important political movements of his time. He was present at the Council of Constance, and voted for the election of Pope Martin V., by whom he was subsequently made a cardinal. When the cardinal's nephew, Henry V. of England, proposed to levy a new impost on the clergy, in order to raise money for carrying on the war against France, B. was the chief opponent of the measure; but nevertheless he lent the monarch, out of his own private purse, £28,000—an almost incredibly large sum in those days, and one which justifies the belief that he was the wealthiest subject of his time in England. His service in this affair was soon recognized by the pope, who sent him as legate into Germany, there to organize a crusade against the followers of John Huss. This undertaking failed; and the cardinal, having expended, in levying an English army against France, the moneys granted from Rome for other purposes, fell under papal displeasure. In 1431, B. conducted the young Henry VI., to France to be crowned in Paris as king of France and England. Here he also endeavored, but vainly, to reconcile the Duke of Bedford, Regent of France, with the offended Duke of Burgundy. Cardinal B. died at Winchester. His memory is stained by his suspected participation in the murder of his great political rival, the Duke of Gloucester, who headed the lay opposition to the despotism of ecclesiastical statesmen; and by the fact, that he presided over the tribunal which sentenced the Maid of Orleans to perish at the stake.

BEAUFORT, *bō-fŏr*, François de Vendôme (Duc de): French naval officer, grandson of Henry IV.: b. Paris, 1616, Jan.; d. 1669, June 25. He is peculiarly known by the conspicuous part he took in the civil war of the Fronde. On the accession of Louis XIV., the queen-regent treated him very favorably, but was soon dissatisfied with his impertinent manners. Her displeasure threw him on the side of the malcontents, and he became one of the leaders of the Frondeurs. He was extremely popular with the Parisians, and was consequently called *le roi des halles*, and he exercised a powerful influence on the common people against Cardinal Mazarin, who was twice driven out of France. In 1664 and 1665 he successfully led attacks against the corsairs of Africa; in 1666 was at the head of the fleet which was to join the Dutch to make war against England; lastly, in 1669 he went to the assistance of the Venetians, then besieged by the Turks in the Island of Candia; fought bravely and was killed in a sally.

BEAUFORTIA, n. *bō-fōr'tĭ-a* [named after *Mary, Duchess of Beaufort* (died 1714)]: genus of plants belonging to the order *Myrtaceæ* (Myrtleblooms). The species, which are not numerous, come from Australia. They are splendid evergreen shrubs.

BEAUFREY, n.: a beam or joist.

BEAUGENCY, *bō-zhŏn-sē′:* ancient town of France, in the dept. Loire, on the right bank of the Loire, 15 m. s. w. of Orleans. B. was formerly surrounded by walls, flanked by towers and bastions, and defended by a strong castle, now ruined. In the history of the wars of France, B. is conspicuous. It was successively in the hands of the Huns, Saxons, Normans, and English, but it sustained most damage during the religious wars of the 16th c. B. manufactures woolens, leather, etc., and has a trade in wine, wool, and corn. Pop. 3,305.

BEAUGRAND, *bō-gräng,* Honoré: Canadian journalist: b. Lanoraie, P. Q., 1849, March 24. In 1865 he joined the French army in Mexico under Marshal Bazaine, and, after the failure to establish Maximilian as emperor, accompanied the army to France. In 1867 he went to New Orleans, where he engaged in newspaper work. He served subsequently as a journalist in Boston and St. Louis, and, returning to Canada, founded *La Patrie* in Montreal in 1879, as an organ of the French Liberal Party. He sold this paper in 1897. In 1887 he established a paper in the English language, the Montreal *Daily News.* He was mayor of Montreal 1885-7, and a delegate from Montreal to the Congress of the World's Chambers of Commerce in London in 1896. His publications include *Melanges; Trois Conferences* (1888); *Lettres de Voyage* (1889); and a novel, *Jeanne la Fileuse.* He was decorated with the Cross of the Legion of Honor in 1885, and became commander of that order in 1889. He is also an officer of the Academy of France; a commander of the Order of Nicham Iftikar of Tunis, etc.

BEAUHARNAIS, *bo-âr-nā′,* Alexandre, Vicomte de: 1760-94, July 23; b. in the island of Martinique; served under Marshal Rochambeau, in the American War of Independence. Afterwards, he went to France, but though well received by the French court, he embraced the popular cause. Elected deputy to the states-general by the nobility and the justiciary authorities of Blois, he was among the first of his order to fraternize with the *Tiers État,* or democratic party. On the night of 1789, Aug. 4, he voted for the abolition of all privileges, and the political equality of all citizens. As a reward he was named sec. of the national assembly, and subsequently member of the military committee, but lost his popularity considerably by venturing to praise and defend the conduct of General Bouillé in the sanguinary suppression of the insurrection at Nancy. The manner in which he received the news of the flight of Louis XVI. exhibits a curious mixture of contempt and dignity. 'Gentlemen,' said he to the assembly over which he presided, 'the king has just gone off; let us pass to the order of the day.' In 1793, he declined the office of minister of war, and tendered his resignation as general of the Army of the Rhine, because it had been determined to exclude the nobility from the service. During the Reign

of Terror, his enemies revived the report that he had participated in the surrender of Mainz, because he had remained idle with his troops for 15 days. In consequence of this accusation, he was called from his country residence at Ferté-Imbault to Paris, where he was tried and sentenced to death by the revolutionary tribunal. He submitted to his fate with firmness, and died on the scaffold, aged 34 years. His widow, Josephine, married Napoleon Bonaparte, who adopted Eugène and Hortense, son and daughter of Beauharnais. Hortense was married to Louis Bonaparte, King of Holland, and became the mother of Louis Napoleon, late emperor of the French. See BONAPARTE.

BEAUHARNAIS, EUGÈNE DE: Viceroy of Italy during the reign of Napoleon I.; afterwards Duke of Leuchtenberg, and Prince of Eichstadt: 1781, Sep. 3—1824, Feb. 21; son of the Vicomte Beauharnais. After his mother's marriage with Bonaparte, B. accompanied him in his campaigns in Italy, and in the expedition to Egypt. He rapidly rose to the highest military rank; and in 1805, after the erection of the imperial throne, he was made a Prince of France and Viceroy of Italy. In 1806, he married the Princess Amelie Augusta of Bavaria, and not long afterwards was created Prince of Venice, and declared by Napoleon his adoptive son, and heir of the kingdom of Italy. Although his political power was much limited, he conducted himself in Italy with much prudence, energy, and moderation, and in all the various scenes of his life he maintained an honorable and virtuous character. It is to be regretted, however, that he considered himself so entirely a vassal of Napoleon, and bound to carry out the often harsh decrees of the latter in regard to Italy. His military talents were great, and were displayed particularly in the Italian campaigns, in the wars against Austria, and in the retreat from Moscow, in which the preservation of the French army from total destruction was very much to be ascribed to the skill and resolution of the viceroy and of Ney. The victory of Lützen was decided by his conduct in that battle. Napoleon sent him from Dresden to Italy, which he ably defended, even after Austria had joined the coalition, and Murat had deserted the cause of the French empire. After the fall of Napoleon, B. entered into a convention with Count Bellegarde. In the affairs of the Hundred Days, he took no part; and in the treaty of Fontainebleau and Congress of Vienna, he was allowed to retain his possessions in the March of Ancona; and large sums were granted to him in compensation for his other Italian possessions, with which he purchased from his father-in-law the landgraviate of Leuchtenberg and principality of Eichstadt, and took his place as Duke of Leuchtenberg among the nobles of Bavaria. He died at Munich.—His eldest son, CHARLES AUGUSTUS NAPOLEON, Duke of Leuchtenberg, married the Queen Donna Maria of Portugal, 1835, Jan. 25, but died March 25. Another son, MAX EUGÈNE JOSEPH NAPOLEON, who succeeded his brother as Duke of Leuchtenberg, married the Grand Duchess Marie Nikolajewna, daughter of the Em-

peror Nicholas of Russia; and his children bear the name of Romanowski, and are ranked among the members of the Russian imperial family. He died 1852, Nov. 1, of disease of the lungs, consequent upon a scientific tour in the Ural. He was a zealous mineralogist, and left large collections, preserved at St. Petersburg.

BEAUMARCHAIS, *bō-mâr-shā'* PIERRE AUGUSTIN CARON DE: 1732, Jan 24—1799, May. 17; b. Paris; son of a watchmaker, and brought up to his father's trade, but became a poet. He early attained proficiency as a player on the harp and the guitar, and was appointed music-master to the daughters of Louis XV. He married, and turned to literature. His first play, *Eugénie* (1767), was successful, and was followed by *Les Deux Amis* (1770). Having become involved in lawsuits with Lablache and Götzman, he revenged himself on the latter—who was a member of the so-called *Parlément Maupeou*—by publishing his famous *Mémoires* (Paris, 1774), which united the bitterest satire with the sharpest logic, and gained for him a reputation that made even Voltaire uneasy, who could not bear a rival in his own department. Despite his wit, however, he lost his suit. His fame now rests on his two comedies, *Le Barbier de Séville* (1775), and *Le Marriage de Figaro.* Of his later works may be mentioned *Mes six Epoques.* In 1776 Vergennes, the minister of foreign affairs, aiming a covert blow at England, decided to subsidize secretly the American Revolution. This was before the arrival of Silas Deane in Paris. B. who had great faith that the Colonists would win offered his services as financial agent. He assumed the fictitious commercial name of Roderigo Hortalez and Co. and was given 1,000,000 frs. from the French Treasury. Spain sent an equal sum. With this B. purchased stores of war from the Royal Arsenal and sent them to America. The first installment arrived at Portsmouth in 1777. This was the first outside help received by the Colonists, and at the moment was most sorely needed. For a full account of B.'s interesting career see De Loménie, *B. and his Times.*

BEAUMONT, Texas, city and county-seat of Jefferson county; situated on the west bank of the Neches river; on the So. Pacific, Sabine and East Texas, Gulf, Colorado and Santa Fé, Gulf and Interstate, Kansas City So., and Beaumont, Sour Lake and W. R. R.'s; 80 miles northeast of Houston and 22 miles distant from the Gulf of Mexico. Beaumont is an important shipping piont; is at the head of tidewater navigation and has a number of important industries, among which are oil refineries, rice mills, stove and iron works, and lumber. Oil was discovered in the Beaumont fields in 1901, when there was opened up a series of gushers, the most remarkable in the history of the oil industry. The lumber industry has assumed great proportions, the city being the natural headquarters for this business, and the annual output now exceeds 360,000,000 feet of yellow pine. The cultivation of rice was begun some years ago; the belt extending along the coast of

Louisiana and Texas produces more rice than is consumed in this country; and the largest rice mill in Texas is located at Beaumont. Among the most notable public buildings are the new Federal Courthouse and Postoffice, costing over $200,000, the Jefferson County Courthouse, city hall, Y. M. C. A. building, and the Sisters Hospital. Religious services are held in the churches representing nearly all denominations. A theatre has been erected at a cost of about $100,000. There are four banks with a combined capital of $600,000 and doing an annual business of $25,000,000. For the public education there are a fine new high school with manual training department and several ward schools. Bell Austin Institute is located there. About 20 miles of street are paved with brick and shell; a complete sewerage system has been installed; a new water works system has been completed at a cost of over $300,000; and there are well appointed fire and police departments. Beaumont was first settled in 1836, was incorporated under the general law in 1881 and granted a special charter in 1889, the affairs of the community now being administered by a mayor and council of six members, elected biennially. Pop. (1900) 9,427; (1910) 20,640.

BEAUMONT, *bō'mŏnt*, FRANCIS: poet and dramatist—FLETCH'ER, JOHN: poet and dramatist: writers so closely associated in their lives and labors, that their names have become indissolubly united.—FRANCIS BEAUMONT, third son of Sir Francis Beaumont, one of the justices of the Common Pleas; 1585–1616; b. at Gracedieu, in Leicestershire, ten years after Fletcher; and died ten years before him. When ten years of age he became a gentleman-commoner of Broadgate Hall (now Pembroke Hall), and in 1600 was admitted a member of the Inner Temple. Two years thereafter, he published certain translations from Ovid. When about nineteen years of age, he became the friend of Ben Jonson, and wrote commendatory verses to some of his dramas. At the theatre, which attracted to its service most of the intellect and wit of the time, he became acquainted with Fletcher, and, drawn together, they lived in the same house till B.'s marriage, 1613. He married Ursula, daughter and co-heir of Henry Isley of Sundridge, in Kent, by whom he had two daughters. He died at the early age of thirty, and was interred in Westminster Abbey. Poetry seems to have run in the blood of the Beaumonts. Several members of B.'s immediate family wrote verses, and the elder brother of the dramatist, Sir John Beaumont, is said by the critics to have much improved our rhyme couplet.

JOHN FLETCHER: 1576-1625; son of a clergyman who was for some time incumbent of Rye, in Sussex; thereafter, Dean of Peterborough, and said to have attended Queen Mary on the scaffold, and to have embittered her last hours with irrelevant exhortation. On his elevation to the see of London, he married a second time, and thereby procured the disfavor of the Virgin Queen. He died shortly afterwards. John entered Bennet College, Cambridge, 1591,

Oct. 15, where he acquired some reputation for classical erudition. It is uncertain whether he took a degree. The *Woman-hater*, produced in 1606–7, is the earliest known play of his. His circumstances in life are not recorded. The last four years of his life produced eleven new plays—a swiftness surpassing that of Shakspeare himself. Tarrying in London, it is said, for a suit of new clothes, he caught the plague, and died, and was buried in the church of St. Saviour's. Fletcher could boast of poetic descent and connection. Dr. Giles Fletcher, the bishop's younger brother, has been called 'an excellent poet;' and two sons of his, Giles and Phineas, distinguished themselves by their verses: one wrote *Christ's Victory and Triumph;* the other, *The Purple Island.*

The works of B. and F. comprise in all 52 plays, a masque, and several minor poems; but it is difficult to allocate, in any satisfactory manner, the authorship of these. F., being the longer-lived and more prolific writer, contributed the largest share. Rowley assisted F. in *The Maid of the Mill.* Some critics think that the hand of Shakespeare may be detected in *The Two Noble Kinsmen*, and not without some show of reason. There is a tone of music and a step of thunder in some of the passages to which no parallel is found in any of the companion-dramas. Two plays left unfinished at F.'s death were completed by Shirley. Out of the 52 plays, B. is supposed to have had a share in the composition of 17, and only three out of that small number were, during F.'s lifetime, published as joint productions. Two of these—*Philaster*, and *The Maid's Tragedy*—are, with the exception of the great passages in *The Two Noble Kinsmen*, the glory of the collection. The question has been often discussed, why these plays are called by the name of B. and F., thus giving precedence to the younger and less voluminous writer. Mr. Dyce thinks, that of the three plays published as joint productions during F.'s life, B. had either the greater share, or that, through feelings of natural courtesy, F. placed the name of his deceased associate before his own, and that future editors naturally followed the arrangement which they found to their hand. Mr. Darling is inclined to give no reason at all, and ascribes the whole thing to accident. From all that can be gathered, it appears that B. possessed the deeper and more thoughtful genius; F., the gayer and more idyllic. There is a strength as of granite rock in *The Maid's Tragedy;* There is a glad, exuberant music, and a May-morning light and freshness, in *The Faithful Shepherdess* (pub. abt. 1610), which Milton did not disdain to accept as a model in the lyrical portions of *Comus*, and of which the *Endymion* of Keats is but an echo. In these plays, B. and F. are brilliant, gay gentlemen. They never sound the deep sea of passion; they disport themselves, dolphin-like, on its surface. They have no power of serious characterization, and their numerous creations are seldom consistent; but they say the most apt, pleasant, and glancing things. Morally, little can be said in their praise. No audience of the present day could sit out the representation of their purest plays.

Some of the impurest are almost beyond conception, yet there is an air of good-breeding about them, and the filth is handled in the most gentlemanly manner. In that great intellectual period in which B. and F. lived, Shakespeare stands conspicuous above the whole dramatic brotherhood no less by his purity than by his mental height. See *Francis Beaumont, a Critical Study,* by C. C. Macaulay (1883).

BEAUMONT, *bō-mōn'*, GUSTAVE DE: 1802, Feb. 6—1866; b. Beaumont-la-Chartre, in the dept. Sarthe; grandson of Lafayette, and, 1836, married his cousin, dau. of Georges Lafayette; studied law. B. and Tocqueville were commissioned, 1831, by the French government to study the prison-discipline of America. When B. returned to Paris, he received a place under government, but was soon deposed, as he refused to conduct the prosecution in the scandalous process against the Baroness de Feuchères. In 1840, he was elected deputy for the dept. Sarthe, and distinguished himself, as a member of the Opposition, by his information and readiness on all political questions. After the Revolution, 1848, Feb., he was returned as member of the legislative assembly, and maintained the character of a sincere but moderate republican. After 1851, Dec. 2, he was arrested and imprisoned in the fortress of Mont Valérien, and after regaining his liberty lived in retirement until his death. The writings on which B.'s reputation is founded are—*Note sur le Système Pénitentiare* (1831); *Du Système Pénitentiare aux Etats-Unis, et de son Application en France* (2 vols., 1832, partly by Tocqueville); *Marie, ou l'Esclavage aux États-Unis* (1835); and *L'Irlande, Sociale, Politique, et Religieuse* (1839).

BEAUMONT, JEAN-BAPTISTE ELIE DE: 1798-1874; b. Canon, Fr.; prof. of geology in the *Collège de France.* He was distinguished both as a practical geological investigator, and as a clear and acute speculator. The prevailing theory regarding the elevation of mountain systems was elaborated chiefly by him. He was occupied 23 years, in conjunction with Dufrénoy, in the preparation of a geological map of France, and its accompanying text. Among his writings are: *Coup d'Œil sur les Mines,* 1824; *Les Vosges,* 1829; *Voyage Métallurgique en Angleterre* (2d ed., 1837–1839); *Notice sur les Systèmes des Montagnes* (1852).

BEAUMONTAGUE, *bō'mon-tāg:* composition of iron borings, brimstone, pitch, sal-ammoniac, rosin, and beeswax, used to fill up cracks and flaws in an iron casting, and so to give falsely an appearance of solidity. The ingredients are melted in a vessel over an open fire, and, when cooled, are rolled into small balls. When used, these are broken up, and a bit is inserted into the flaw. A red-hot iron passed over it forces the B. into the crevices of the faulty article, which, when finished, bears no trace whatever of having been foully dealt with.

BEAUMONTITE, n. *bō'mon-tīt* [named after the celebrated *Élie de Beaumont,* prof. of geology in the School of Mines at Paris, (born 1798)]: a mineral, a variety of Heulandite, found near Baltimore.

BEAUNE, *bōn:* cap. of an arrondissement in the French dept. Côte d'Or, formerly included in the Duchy of Burgundy; in a pleasant district on the river Bourzeoise, about 23 m. s.s.w. of Dijon. The town is well built; has a fine parish church, Nôtre Dame, founded 976 by Duke Henri Burgundy; and a splendid hospital founded 1443 by Nicholas Rollin, chancellor of Philip, Duke of Burgundy. There are manufactories of serges, woolen cloth, and cutlery. There is considerable trade in Burgundy and Champagne wines. B. gives its name to one of the best of the Burgundy wines. Pop. 13,726.

BEAUNE, *bōn,* FLORIMOND DE: 1601-52; b. Blois, Fr.: distinguished mathematician, and friend of Descartes. His labors and discoveries contributed greatly to the improvement of the modern analytical geometry first introduced by Descartes. Algebra also was enriched by B.'s showing that, in equations to the fourth degree, the limits of positive roots might be found from the coefficients. B. may be regarded as the proper founder of the Integral Calculus, as he first endeavored to deduce the nature of curved lines from the properties of their tangents. The so-called 'B.'s Problem' (completely solved only by Jean Bernouilli), still given in the Integral Calculus, was for his time new and remarkable; it turns also on the determination of the nature of a curved line from a property of its tangent. The only work of his extant is *De Æquationum Limitibus Opuscula duo, et Notæ Breves.*

BEAUREGARD, *bō'rė-gârd,* F. *bō-rė-gâr'* or *bōr-gâr',* PIERRE GUSTAVE TOUTANT: 1818, May 28—1893, Feb. 20: soldier: b. near New Orleans. He graduated at West Point Milit. Acad. 1838, and was assigned to the artillery, but soon was transferred to the engineer corps. He was engaged in engineer work till the Mexican war, in which he served. He was twice wounded in the assault of the city of Mexico; was brevetted major; rose to the rank of capt. 1853; till 1861 superintended public works in the south, and then resigned his commission. By the Confederate govt. he was appointed to command the defenses of Charleston, and opened fire on Fort Sumter 1861, Apr. 12. He was the Confederate commander in the first Bull Run battle; joined Gen. Albert S. Johnston in Tenn. Timely reinforcements after Shiloh enabled Gen. Grant to press the Confederates, and B. retreated in good order to Corinth, which, however, he was compelled to evacuate May 29. Again he commanded at Charleston with full rank of general 1862, Sep. —1864, Apr., confronting the formidable land and naval forces under Gen. Gillmore and Admirals Dupont and Dahlgren. B. reinforced Lee in Va., May, defeated Gen. Butler at Drury's Bluff, and held Petersburg. In Oct. he was dispatched to Ga. to resist Sherman. In Apr. he surrendered with General Joseph E. Johnston to Sherman in N. C. He published *Principles and Maxims of the Art of War,* and *Report of the Defense of Charleston.* After the war he returned to New Orleans, where he became pres. of

P. G. T. BEAUREGARD.

the New Orleans Jackson and Mississippi railroad, adjutant-general of Louisiana, and manager of the Louisiana state lottery. He later declined offers to command the Rumanian and Egyptian armies.

BEAUTY, n. *bū'tĭ* (F. *beauté*, beauty—from OF. *betlê* and *beltet*—from mid. L. *bellĭtātem*, beauty: It. *bello;* L. *bellus*, pretty, handsome]: the appearance and properties in any person or thing that please and delight the eye; those qualities in a thing that delight the mind or any of the senses; a lovely and pleasing person. BEAUTEOUS, a. *bū'tĭ-ŭs*, pleasing; lovely. BEAUTEOUSLY, ad. *-lĭ*. BEAU'TEOUSNESS, n. the state or quality of being beauteous. BEAUTIFUL, a. *bū'tĭ-fûl*, lovely; fair; elegant. BEAU'TIFULNESS, n. the quality of being beautiful. BEAU'TIFULLY, ad. *-lĭ*. BEAUTIFY, v. *bū'tĭ-fī* [L. *fīō*, I am made]: to make beautiful; to adorn. BEAU'TIFYING, imp. BEAUTIFIED, pp. *bū'tĭ-fīd*. BEAU'TIFIER, n. one who adorns. BEAUTY-SPOT, n. a spot placed upon the face to direct the eye toward some beauty, or to heighten some charm; a patch; a foil (*lit.* and *fig.*).—SYN. of 'beautify': to adorn; embellish: deck; grace; ornament; decorate;—of 'beautiful': fine; handsome; pretty; lovely; fair.

BEAUTY: see ÆSTHETICS: ART.

BEAUVAIS, *bō-vā':* important manufacturing French town, cap. of the dept. Oise; in the valley of the Thérain (a tributary to the Oise); about 55 m. n.n.w. of Paris, surrounded by rising woodlands. Formerly B. was included in the old province, Ile de France. It is the residence of a bishop, and contains a literary and economical society, public library, museum, etc. Among its several fine buildings, the most noteworthy is its uncompleted cathedral, the choir of which is the loftiest as well as one of the finest specimens of Gothic in France. The manufactures of B. include woolen cloths, shawls, carpets, Gobelin tapestry, etc. B. is an ancient town. It was included in the country of the powerful *Bellovaci*, in *Gallia Belgica*, and was known by the Romans as *Cæsaromagus*, afterwards as *Bellovacum*. In the middle ages, it was styled *Belvacum*. In 850, and at other times, B. was desolated by the Normans. The *Jacquerie*, or Peasants' War, broke out in the neighborhood of B., 1358, Mar. 21. In 1443, B. was besieged by the English, who were repulsed by the heroic self-sacrifice of Jean Lignière. Again, 1472, it was besieged by Charles the Bold of Burgundy, with an army of 80,000 men, when the women of B., under the leadership of the heroine Jeanne Lainé, surnamed La Hachette for her daring, displayed remarkable valor. The standard which the Burgundians had planted on the wall was torn down by Jeanne Lainé, and borne off by her in triumph. The banner is preserved in the town hall, and a procession, in which it is carried by young girls, annually commemorates the heroic deed. B. is the birthplace of the learned Dominican Vincent de Beauvais (Vincentius Bellovacensis. Pop. abt. 20,000.

BEAVER, n. *bē'vėr* [OF. *bavière*—from *baver*, to slaver]. the movable part of a helmet which covered the face, and was raised or let down to enable the wearer to eat or drink —so named from a fancied resemblance to a child's bib. See HELMET.

BEAVER, n. *bē'vėr* [AS. *beofer;* Dan. *bæver;* Ger. *biber;* F. *bièvre,* a beaver: L. *fiber*], (*castor fiber*): amphibious quadruped of the order *Glires,* or *Rodentia* (q.v.), valued for its fur, and for the peculiar substance called *Castoreum* (q.v.), which it yields, and also much noted for its instincts. Some naturalists regard the American B. as distinct from that of Europe and Asia; but the differences observable either in external or anatomical characters are inconsiderable; and the difference in instincts and habits is not proved to exist. If there is only one species of B., it is very widely distributed in the n. regions of the world, reaching in America almost as far s. as the Gulf of Mexico. It formerly existed in the British islands, where it has long been extinct; and it has become rare in Europe, in many parts of which it was common. It has become rare also in the United States, disappearing before man; but is nowhere so abundant as in that wide region of lakes and rivers which lies to the n.

Beaver.

and w. of the settled parts of N. America. Considerable numbers of beavers are found on the banks of the Obi and other rivers of Siberia, and in Kamtchatka.

The incisors or cutting teeth of the B. are remarkably strong, and exhibit in the highest degree the distinctive character of the order to which it belongs—the front of hard enamel, which in the B. is of a bright orange color; the back of the tooth formed of a softer substance, more easily worn down, so that a sharp, chisel-like edge is always preserved; the bulbs being also persistent, so that the teeth are continually growing, as by their employment in gnawing wood, they are continually being worn away. There are four flat molar teeth (or grinders) on each side in each jaw. Each foot has five toes: those of the fore-feet are short, and not connected by a web; those of the hind-feet are long, spreading out like the toes of a goose, and webbed to the nails. In accordance with this remark-

able peculiarity, the B., in swimming, makes use of the hind-feet alone, the fore-feet remaining motionless and close to the body. Another character, to which nothing similar appears in any other rodent, is the large, horizontally flattened tail, which, except at the root, is not covered with hair, like the rest of the body, but with scales. The caudal vertebræ, however, do not exhibit a flattened form.

The B. is usually at least two ft. in length, from the nose to the root of the tail; the tail is of an oval form, about ten inches in length, fully three inches in greatest breadth, and scarcely an inch in thickness. These dimensions are sometimes exceeded. The general form of the animal is thick and clumsy, thickest at the hips, and then narrowing abruptly, so that it seems to taper into the tail. The head is thick and broad, the nose obtuse, the eyes small, the ears short and rounded. The fur consists of two kinds of hair; the longer hair comparatively coarse, smooth, and glossy; the under coat dense, soft, and silky. The color is generally chestnut, rarely black, spotted, or nearly white.

The B. is very aquatic in its mode of life, and it seldom wanders far from some lake or river. In consequence of its habits, it is also limited to wooded districts, and the northern range of the species is everywhere terminated by the limits of the wood upon the river-banks.

The food of the B. consists of the bark of trees and shrubs (birch, poplar, willow, etc.), and of the roots of water-lilies (*Nuphar luteum*) and other aquatic plants. In summer, it eats also berries, leaves, and various kinds of herbage. There is no reason to think that it ever, as has been supposed, kills or eats fish. Like some other rodents, it lays up stores of provisions for winter; but these, in the case of the B., consist chiefly of bark, or of branches, and even trunks of trees. Its extraordinary powers of gnawing are exerted to cut down trees of several inches in diameter, both for food, and for the construction of those houses and dams which have rendered it so much an object of admiration to mankind. A tree of 18 inches in diameter has been found thus cut down by beavers, although smaller ones are preferred; and when a tree of this size is cut, the branches only, and not the trunk, are employed in the architectural operations of the animals. These operations are very wonderful, although the statement, at one time commonly made, that beavers drive stakes into the ground is a mistake; and some of the other particulars which passed current with it are equally fabulous. The houses or lodges of beavers are grouped together near the edge of the water, the mud being scraped away from the front so that there may be a sufficient depth of water there to allow free egress, even during the most severe frost. The winter stores of the animals, consisting of piles or heaps of wood, are also always under water, at such a depth that they cannot be locked up in ice. When the depth of water is not sufficient, the beavers construct a dam across the stream, by the side of which the lodge is

placed; the dam is sometimes as much as 300 yards in length, convex towards the current, and most convex in the strongest currents, sometimes extending on both sides beyond the natural channel of the stream. The materials of which it is composed are sticks, roots, and branches, with stones, moss, grasses, and mud strangely commingled, but in such a manner that the structure becomes absolutely water-tight. Branches of which the bark has been used for food, or taken off for winter provender, are very generally employed for building purposes. In their building beavers interlace small branches with each other and with the larger; and a B. kept in confinement has been known to manifest this instinct, by interlacing branches with the bars of its cage, while it also filled the interstices with carrots, and other vegetables, given it for food, nicely bitten to the proper size, and packed in snow, to protect itself from the cold. B. dams are built with the sides inclining towards one another, so that although ten or twelve ft. wide at bottom, they have a narrow top. The dams and houses are annually repaired, before winter comes on, the work being performed by night. A broad ditch is often dug all around the lodge, so deep that it cannot freeze to the bottom, and into it the beavers make holes by which they go out and bring their food. The larger lodges are in the interior, about seven ft.in diameter, and between two and three ft. high. The top is formed of branches of trees, matted with mud, grass, moss, etc. The walls are very thick, and the whole structure not only secures much warmth, but is a sufficient protection from wolverines, and other beasts of prey. Different apartments have often one common roof, but they have usually no internal communication. The sleeping-places of the animals are around the wall of their lodge, the centre being left free; they are formed merely of a little grass or tender bark of trees. A single house seldom contains more than ten or twelve beavers, but many such families are often congregated in one place. Beavers, both in a wild state and in confinement, are scrupulously cleanly in their habits.

Beavers often sit on the hind feet and tail, and eat in this posture, holding up the food in their fore-paws. They also walk on the hind-feet, with support of the tail, when they carry materials to their buildings, except branches, which are dragged. They have considerable power in the tail, and not unfrequently flap it, which has given rise to an opinion, perhaps not altogether erroneous, that they use their tails for plastering their buildings, or beating and adjusting the mud which is employed in them.

Beavers do not usually eat in their lodges, but in holes or burrows in the bank of the river, the entrance to which is from beneath the water, and which thence proceed obliquely upwards, often to a distance of many feet. To these holes the beavers also flee when their lodge is broken up; and it is therefore a common practice of the B. hunters to break up the B. lodges, that they may take the ani-

mals in their holes or vaults. Beavers are also taken by nets and traps.

It is chiefly in winter that beavers congregate together. During summer, they wander about a little. The young are generally produced in April or May, from two to seven at a birth. Their eyes are open when they are born.

Single beavers are frequently met with, which live apart from all others of their species. All of these are males, which, it is supposed, have been conquered and driven away by others of their sex.

In the parts of N. America where beavers have now become rare, they live mostly in burrows in the river-banks, like those still found in Europe. Circumstances prevent them from following out their gregarious tendencies. That the beavers of Europe and Asia construct lodges and dams, when they have opportunity of congregating in sufficient numbers, appears to be no less certain than that those of America do so.

Large glandular pouches, two in number, closely connected with the organs of reproduction, contain the substance called *Castoreum* (q. v.). Its uses in the animal economy are not well known; they are probably analogous to those of musk, civet, etc.; but its peculiar pungent odor is so attractive to beavers, that use is made of it as a bait for B. traps.

When America was first entered by Europeans, the beaver was found inhabiting almost all of the woodland streams of the whole northern continent, from the Arctic Circle down to Central Mexico. Its temperament and manner of life made it an easy prey, and prevented it from adapting itself to changed conditions as did its neighbor, the muskrat. It rapidly disappeared, therefore, wherever civilization progressed or trapping was systematically carried on, and now no beavers are to be found south of the rivers that flow into Hudson Bay, except in the northern parts of the Rock Mountains and in a few remote and scattered places like the forests of Maine and the Lake Superior region, where they are more or less protected by law. A few survive, nevertheless, in the wild ranges of the southern Alleghenies and along the borders of Mexico. The principal use to which beaver fur was put was for making of hats; and it is probable that had not the method of making hat-coverings from silk been discovered, the animal would long ago have become extinct, and also its South American substitute, the coypu or nutria.

Fossil remains of beavers, apparently of the same species with that now existing, are found in the deposits referred by geologists to the pliocene and pleistocene periods. Other remains are also found of a much larger animal of the B. kind, which must have existed in Europe and Asia with the present species, but which seems to have become extinct before the historic period. They were different, however, not merely in size, but in other particulars so important, that Owen has constituted for the 'great B.' a distinct genus, *Trogontherium*.

BEAVER Islands: group of islands in Lake Michigan, to the west of the Straits of Mackinaw; they constitute Manitou co., Mich. The principal island was settled by a band of Mormons 1846, but they did not remain. The chief town and county seat is St. James.

BEAVER, James Addams: lawyer: b. Millerstown, Perry co., Penn., 1837, Oct. 21. In 1846 his family removed to Belleville, Mifflin co., where he went to school for several years, and in 1854 entered Jefferson College, Cannonsburg, Penn. Here he graduated 1856, read law, and by the time he was of age was a partner in a law firm in active practice at Bellefonte, Penn. In 1861 he was second lieut. of a local volunteer organization which joined the Union army, and was afterward lieut. col. of the 45th Penn. vols., and in 1862 col. of the 148th Penn. vols. He was wounded at the battle of Chancellorsville, was afterward on recruiting service, and then led his regt. through the Wilderness campaign 1864, May, and was in command of his brigade at the battle of Cold Harbor. He was wounded in the assault on the works at Petersburg, and again at the battle of Ream's Station, where his right leg was shattered by a rifle-ball, rendering amputation necessary. He was brevetted brig. gen. 1864, Nov. 10, and mustered out Dec. 22. After the close of the war, he applied himself to his law practice. In 1873 he was elected a member of the board of trustees of the Penn. State Univ. In 1886 was elected gov. of Penn., though defeated 1882. In 1888 and 1895 he was vice-moderator of the Presbyterian General Assembly, and in 1898 a member of the President's commission on investigation of the War Department. Judge of the Superior Court of Pennsylvania since 1896.

BEAVER DAM: city of Dodge co., Wis.; on B. D. creek and lake, 63 m. w. n. w. of Milwaukee; on the Chicago, Milwaukee and St. Paul r. r. It has a handsome city hall, a high school and other schools, churches, a national bank, hotels, and weekly newspapers. Its industrial and manufacturing establishments are an iron foundry, 2 woolen-mills, cotton-mill, tannery, grist-mill, planing-mill, sash and blind factory, and breweries. Pop. (1890) 4,222; (1900) 5,128; (1910) 6,758.

BEAVER FALLS: town in Beaver co., Penn.; on the w. bank of Beaver river and on the Pittsburg, Fort Wayne and Chicago, and the Pittsburg and Lake Erie railroads; 20 m. s. of Newcastle, 34 m. n. w. of Pittsburg. It is in a rich coal and natural-gas region, has railroad connection with important points n. and s., and is noted for its varied and extensive manufactures. The river furnishes motive-power for all its factories; and natural gas, used in the furnaces, is obtained from three wells. There are several churches and public schools, also banks and newspapers. The industries comprise file, steel, wire, nail, bridge, tube glass and chemical works, saw factories and rolling and planing mills. Bridges, shovels, stoves,

and doormats are among the special products. Pop. (1900) 10,054; (1910) 12,191.

BEAVER INDIANS: tribe or band of Amer. aboriginals, belonging to the Ojibway stock, and settled on the Peace river in British Columbia.

BEAVER-RAT: another name for the Musk-rat or Musquash (q. v.): see also HYDROMYS.

BEAVERTAIL: southern extremity of Canonicut Island, Narragansett Bay; on it is a light-house.

BEAVERTEEN: n. [from *beaver*, the animal]: a cotton twilled cloth in which the warp is drawn up into loops, forming a pile, thus distinguishing the fabric from velvet, in which the pile is cut; a kind of fustian made of coarse twilled cotton, shorn after it has been dyed. If shorn before being dyed it is called *mole-skin*.

BEAVER-TOOTH: the enamelled tooth of the beaver, once used by the North American Indians as a cutting instrument.

BEAVER WOOD—BEAVER TREE: see MAGNOLIA.

BEBEERINE, n. *bĕb-ē′rĭn:* one of the alkaloids; obtained from the Greenheart bark or *bebeeru* (or *bebeerina*), of Demerara. It is used in medicine in place of quinine, which it resembles in properties, though it is not so powerful in its action as a tonic and febrifuge. The condition in which it is generally sent into market is as the sulphate of B., occurring in shining scales of a pretty brown color, soluble in water.

BEBEE′RU, or BEBEERINA, or BEEBEE′RU, or BIBI′RI: see GREENHEART.

BEBEL, *bā′bĕl*, FERDINAND AUGUST: German Socialist: b. Cologne, 1840, Feb. 22. He was apprenticed to the turner's trade, and acquired a practical knowledge of the difficulties and disabilities of workingmen. He settled in Leipsic in 1860, joined various labor organizations, and became one of the editors of the *Volkstaat* and of the better known *Vorwärts*. Membership in the North German Reichstag, was followed by his election to the German Reichstag, of which he was a member from 1871 to 1881, and which he entered again in 1883, being the acknowledged leader of his party therein. Bebel's earnestness, large sympathy, and wide range of knowledge impress his hearers, although his appearance and manner in the Reichstag did not at first win them. These qualities are also characteristic of his books, among which are: *Our Aims* (1874); *The German Peasant War* (1876); *The Life and Theories of Charles Fourier* (1888); *Women in Socialism, the Christian Point of View in the Woman Question* (1893); etc.

BEBEL, HEINRICH, German humanist: b. 1472; d. 1518. He was an alumnus of Cracow and Basel universities, and from 1497 professor of poetry and rhetoric at Tübingen. His fame rests principally on his *Facetiæ* (1506), a curious

collection of bits of homely and rather coarse-grained humor and anecdote, directed mainly against the clergy; and on his *Triumph of Venus*, a keen satire on the depravity of his time.

BEBLUBBER, v. *be-blŭb'ėr* [*be*, and *blubber*]: to cause to blubber; to make to swell with weeping. BEBLUB'BERED, pp.

BECALM, v. *bĕ-kâm'* [*be*, and *calm*]: to still; to make quiet. BECALM'ING, imp. BECALMED, pp. *bĕ-kâmd:* ADJ. applied to a ship that lies still for want of wind.

BECAME, v. *bĕ-kām':* see under BECOME.

BECAUSE, conj. *bĕ-kawz'* [*be*, for and *cause*; also *by*, and *cause*]: for this cause that; on this account that; a word indicating the drawing of a conclusion from something before affirmed; an *illative* particle so named as marking an inference.—SYN.: consequently; accordingly; therefore; wherefore; then; thence; hence; since; for; as; inasmuch as.

BECCABUNG'A: see BROOKLIME.

BECCAFICO, n. *bĕk'ă-fē'kō* [It. *beccafico*, a fig-pecker —from *beccare*, to peck; *fico*, a fig], (*Sylvia hortensis*, or *Curruca hortensis*): little bird of the family of the *Sylviadæ*, or Warblers (q. v.), sometimes called the Pettychaps, and sometimes the Garden Warbler, rather rare in Britain, but abundant in more southern parts of Europe, and in great demand for the table in Italy, its flesh being regarded as of peculiar delicacy. It feeds on figs and grapes. It is a mere summer bird of passage in Europe. The upper parts are mostly of a brown color, the lower parts whitish. It is a bird of very pleasing song. The name is sometimes extended to other birds of the same family used for the table.

BECCAFUMI, DOMENICO, *bĕk-kâ-foo'mē, dō'mā-nē'kō*, surnamed MECHERINO, Italian painter: b. near Sienna, 1486; d. Sienna, 1551. As a shepherd boy amusing himself with drawing figures on the sand, he attracted the attention of a wealthy man, from whom he takes the name of Beccafumi, who, discerning his genius, sent him to Sienna to study drawing. He there saw, admired, and tried to imitate the paintings of Perugino, but having heard much of Raphael and Michael Angelo, obtained means from his patron to travel to Rome. After much study of the masterpieces of the Vatican he returned to Sienna and enriched its churches and its city with many noble frescoes, and painted an altarpiece in the museum there. He drew and colored well, possessed strong inventive powers, was thoroughly acquainted with perspective, and excelled particularly in foreshortening, but he was not free from mannerism, and his heads are in general deficient in both dignity and beauty. He was buried with pomp in Sienna cathedral, among some of the finest monuments of his genius. Hs paintings include: *St. Catherine receiving the Stigmata* (Sienna); *Madonna and Child* (Ber-

lin); *Marriage of St. Catherine* (Rome); etc. He also gained distinction as a sculptor and engraver.

BECCAMOSCHINO. *bĕk'â-mōs-kē'no* (*Sylvia cisti'cola*): little bird of the family of the Warblers, found in Italy; remarkable for its nest, which resembles that of the tailor-birds, being usually placed in a bush of lengthened herbage, the leaves and stalks drawn together over it, and a flooring formed for it by leaves curved across below, and sewed together generally with some kind of vegetable fibres.

BECCARIA, *bĕk-â-rē'a*, CESARE BONESANA: 1735 (or 8) —1794, Nov.; b. Milan. The opinions of the French encyclopedists, especially those of Montesquieu, had the greatest influence in the formation of his principles and sentiments. His most popular work is his *Trattato dei Delitti e delle Pene* (Treatise on Crimes and Punishments), published 1764, in which he argues against the severities and abuses of criminal law, especially capital punishment and torture. The work was extremely popular, and was translated into several European languages. It is marked by eloquence, sensibility, and lively power of imagination. Kant unfairly accuses the author of an affected humanity, though it must be admitted that the German philosopher has exposed the invalidity of some of the arguments brought forward. On the whole, however, the work of B. is acknowledged to have done great good, and the subsequent reforms in the penal code of European nations have generally taken the direction which he pointed out. He was among the first to advocate the beneficial influence of education in lessening crime. His new views were strongly supported by Count Firmian, the Austrian governor of Lombardy, a man of liberal and enlightened sentiments. In 1768, B. was appointed prof. of political philosophy at Milan.

BEC-FIN, *bĕk-fang'*: common Fr. name for different species of birds of the family of *Sylviadæ*, or Warblers (q. v.). The name is sometimes met with in English books.

BECHANCE, v. *bĕ-chăns'* [*be*, and *chance*]: in *OE.*, to befall; to happen.

BECHE, n. *bāsh* [F. *bèche*, a spade; *bècher*, to dig, pierce, or turn up with a spade]: in *well-boring*, an instrument for seizing and recovering a rod used in boring when it has become broken in the process.

BÊCHE-DE-MER, *bāsh-de-mär'*, or TREPANG: an article of luxury among the Chinese, consisting of the dried bodies of several species of *Holothuria* (q. v.), or Sea-cucumber, which are found in great abundance in the shallow waters of lagoons, and on reefs, from the s.e. coast of Asia to Australia. The traffic in B. is very extensive, and the Malays catch the animals, and prepare them in large quantities for the Chinese market. They are usually about 8 or 9 inches long, but some are 2 ft. in length, and 7 or 8 inches in girth. They are often found nearly buried in the coral

sand, their feathered tentacula alone floating above it. The larger ones are sometimes speared in shallow water; but most of them are taken by divers in depths of from 3 to 5 fathoms. An expert diver will bring up eight or ten at a time. They are split down one side, boiled, pressed flat with stones, dried in the sun, and afterwards in smoke, and packed in bags, in which state they are bought by the Chinese, and conveyed in junks to China. Fleets of Malay proas are employed in the search for this curious production of the sea. Macassar is the great staple-place of the trade. There is a considerable export of B. from Manilla also. B. is extremely gelatinous, and is much used by the Chinese as an ingredient in rich soups.

BECHER, *běk'ėr*, JOHANN JOACHIM: 1635-82: b. Speier: author of the first theory of chemistry. He gained an extensive knowledge of medicine, physics, chemistry, and politics, and in 1660 was made a member of the imperial council at Vienna. He removed to Mainz, and thence to Munich, Würzburg, Haarlem, and finally London, where he died. He had many enemies, and was accused—not altogether unjustly—of charlatanry; nevertheless, he rendered important services to chemistry. His *Physica Subterranea* was the first attempt to bring physics and chemistry into close relation; in these two he sought the causes of all the inorganic phenomena in the world. He at the same time began to construct a theory of chemistry, and also investigated the process of combustion. B. taught that every metal was composed of an earthy substance common to all metals; of a combustible principle also identical in all; and was differentiated from other metals only by the possession of a peculiar mercurial element; when a metal was heated, until it had changed its form, the mercurial substance was discharged, and nothing remained except metallic calx. Herein lies the first germ of Stahl's phlogistic theory, which obtained universal currency until the time of Lavoisier.

BECHILITE, n. *běch'i-līt* [from *Bechi*, an Italian mineralogist]: a mineral classed by Dana with the Borates. It consists of boric acid, 51.13 lime, 20.85; water, 26.25; with 1.75 of silica, alumina, and magnesia. It was found by Bechi as an incrustation at the baths of the boric acid lagoons of Tuscany, being formed probably by the action of hot vapor on lime. The South American mineral Hayesite may be the same species.

BECHSTEIN, *běch'stīn*, LUDWIG: German poet and novelist: b. 1801; d. 1860. He is chiefly remembered for *The Legend Treasure and the Legendary Cycles of Thuringia* (1835-8); *German Fairy-Tale Book* (1845, 41st ed. 1893); and others. Among his epical poems are: *The Children of Haymon* (1830); *The Dance of Death* (1831); *New Natural History of Pet Birds* (1846); a humorous didactic poem; and *Thuringia's Royal House* (1865). Of his numerous novels, chiefly historical, the best known is *Journeys of a Musician* (1836-7).

BECHUANALAND, *bět-choo-â'nâ-lănd*, Africa; an ex-

tensive British territory in the southern part of the continent, so named from its chief inhabitants, the widely spread race of people called Bechuanas. It may be said to extend from the Orange River on the south to the Zambesi on the north, having the German territory on the west and the former South African republic (Transvaal), etc., on the east. The Bechuanas belong to the great Kaffir race, and are divided into tribal sections, each of which has a chief. Many of them live in villages or towns, some of which are of considerable size. They work with skill in iron, copper, and ivory, and engage in husbandry, cattle-breeding, and hunting. Bechuanaland is a portion of an elevated plateau 4,000 to 5,000 feet above the level of the sea, and though so near the tropics, is suitable for the British race. In winter there are sharp frosts, and snow falls in some years. The rains fall in summer, and then only the rivers are full. It is an excellent country for cattle; sheep thrive in some parts, and there are extensive tracts available for corn lands; but it is not a wheat country on account of the summer rains. Though apparently subject to droughts, it is not more so than Cape Colony, and the greater portion will be available for farming operations when the necessary dams have been constructed. It can be reached from Cape Town, Port Elizabeth, Durban, Delagoa Bay, and the Zambesi, the railway from the former being extended to Kimberley, Vryburg, Mafeking, Palachwe, Tati, and Buluwayo. There are extensive forests to the northeast, and to the west lies the Kalahari desert, which only requires wells dug to make it habitable. Pop. 150,000. Area 275,000 sq.m.

The enormous quantities of buck which roam over the land attest the productiveness of the soil. Gold has been found near Sitlagoli, and there are indications of gold-bearing quartz reefs in many directions. Diamondiferous soil is also said to exist in several localities; indeed, diamonds were discovered at Vryburg in the autumn of 1887.

The province of Stellaland is principally inhabited by Boers, and the remainder of the country by Bechuanas. The Bechuanas are a black race possessing a language in common with the Bantu races of South Africa, extending as far north as the equator. Their ancestors are said to have come from the north, and progressing southwest, met the Hottentots from the Cape of Good Hope journeying north. The Bechuanas have divided up within the last 150 years, and comprise the Bahurutse, Bamangwato, Bakwena, Bangwaketse, Barolongs, Batlapins, and Batlaros. Each tribe has an animal as an emblem, or heraldic sign, which it is said they hold in esteem. Since 1832 they have been at enmity with the Matabele, and in later years the Transvaal Boers have on one pretext or another endeavored to occupy their country. During the native risings in 1878 the Bechuanas invaded Griqualand West, and were in turn subdued by British volunteers as far as the Molopo. When the British government withdrew from Bechuanaland in 1880, the natives, being helpless,

were left to the mercy of the Boers of the Transvaal, whose harsh treatment in 1882 and 1883 led to the Bechuanaland expedition in 1884. At the beginning of the 19th century the Bechuanas were further in advance in civilization than other nations of South Africa, and they are still ahead in this respect. The system of government among the Bechuanas would be termed in Europe local government. All important matters are decided in the public assembly of the freemen of the town, but matters are previously arranged between the chief and the headmen. During the Boer-British war of 1899-1900, Mafeking was the scene of one of the most determined and successful defenses in history. See BADEN-POWELL.

BECK, n. *běk* [AS. *beacen*, a sign: Icel. *bakna*, to nod: Gael. *beic*, a movement of courtesy; a contraction of BECKON]: a nod of the head meant to invite attention; in *OE.*, a weight of 16 lb. or a measure of 2 gals.: V. to make a sign with the head; to call by a nod. BECK'ING, imp. BECKED, pp. *běkt*.

BECK, n. *běk* [AS. *becc:* Ger. *bach:* Icel. *beckr*]: a little stream; a brook.

BECK, JAMES BURNIE: statesman: 1822, Feb. 13—1890, May 3; b. Dumfriesshire, Scotland. He emigrated to America while young, and having had a general education at home, studied law at the Transylvania Univ., where he graduated 1846, beginning practice at Lexington, Ky. He became eminent as a lawyer; and was elected 1866 as a democrat to the house of representatives, being re-elected until 1874, when he declined to serve longer. He was elected U. S. senator 1877, and by re-election served until his death. He was a rapid and brilliant speaker, a conscientious worker, and noted as an earnest and consistent opponent of high tariff. He served on the most important committees in both houses.

BECK, KARL: Austrian poet: b. Baja, Hungary. 1817, May 1; d. Vienna, 1879, April 10. His poems reflect the passionate temperament of his Hungarian countrymen in sonorous verses of consummate finish. Among his works are *Nights* (1838); *The Poet Errant* (1838); *Jankó* (1842), a romance in verse; *Songs of the Poor Man* (1847); *Jadwiga* (1863), a tale in verse; *Mater Dolorosa* (1854), a novel.

BECK, LEWIS CALEB: author: 1798, Oct. 4—1853, Apr. 20; b. Schenectady and N. Y.; bro. of T. Romeyn B. and John B. B. He graduated at Union Coll. 1817, applied himself to medicine, and practiced in Schenectady and St. Louis. He became prof. of botany in the Rensselaer Polytechnic Institute (1824-29), and held the same chair in the Vermont Acad. of Medicine (1826-32), Rutgers Coll. (1830-53), and Albany Med. Coll. (1841-53).

His publications include: *Gazetteer of Illinois and Missouri* (1823); *Salt Springs at Salina* (1826); *Mineralogy of New York*, (1842), his most important work; and

Botany of the United States North of Virginia (1848). Cf. Gross, *American Medical Biography.*

BECK, THEODORIC ROMEYN, M.D.: 1791, Apr. 11—1855, Nov. 19; b. Schenectady, N. Y. He graduated at Union Coll. 1807, studied medicine, and began practice in Albany 1811. He held the chair of med. jurisprudence in the Coll. of Physicians and Surgeons, Fairfield, N. Y.; and was principal of the Albany Acad. 1817-48, being also prof. of materia medica in Albany Med. Coll., 1840-54. He was pres. of the State Med. Soc. 1829, and of the board of managers of the state lunatic asylum 1854; and, associated with his bro. John B. B., was author of *Elements of Medical Jurisprudence,* which became an accepted authority.—His bro. JOHN BROADHEAD B., M.D. (1794, Sep. 18.—1851, Apr. 9; b. Schenectady, N. Y.), graduated at Columbia Coll., New York, 1813; was prof. of materia medica, botany, and med. jurisprudence in the N. Y. Coll. of Physicians and Surgeons, and wrote several important medical works.

BECKE, *běk,* GEORGE LOUIS: Australian author: b. Port Macquarie, New South Wales, 1857, June 17. He went to sea at the age of 14 and has spent his life trading in the South Pacific. His publications are: *By Reef and Palm* (1894); *South Sea Stories*; *The Ebbing of the Tide* (1896); and with W. Jeffery, *A First-Family* (1896); *Pacific Tales* (1897); *Wild Life in Southern Seas* (1897); *Ridan, the Devil Tom Wallis* (1900); *Edward Barry; Tessa, the Trader's Wife*; *By Rock and Pool*; *Breackley Black Sheen*; *Yorke the Adventurer* (1901); *The Strange Adventure of James Shervinton*; *The Talasco Brig* (1902); *Rodman the Boat Steerer*; *Naval Pioneers of Australia* and *Admiral Philip* (1899); *The Tapu of Banderah* (1901); *Helen Adair*; *Chinkie's Flat* (1903); *Tom Gerrard* (1904); *Notes from My South Sea Log* (1906); etc.

BECKER, n. *běk'ėr* (*Pagrus vulgaris*): a fish of the family *Sparidæ*; often called Porgy, or Scup, or Braize.

BECKER, AUGUST, German poet and novelist: b. 1828; d. 1891. He was the author of *Young Friedel, the Minstrel* (1854); a lyrical epic; and of the novels, *The Rabbi's Bequest* (1866); *Proscribed* (1868); *The Carbuncle* (1870); *My Sister* (1876), descriptive of the doings of Lola Montez and the events of 1848 in Bavaria; *Painter Fairbeard* (1878); and *The Sexton of Horst* (1889).

BECKER, GEORGE FERDINAND, PH.D.: geologist: b, New York, 1847, Jan. 5. After graduating at Harvard 1868, he went to Heidelberg and took his degree Ph.D., and thence to Berlin, where he graduated from the Royal School of Mines. Returning to America, he taught mining and metallurgy in the Univ. of California 1875-79, in the latter year taking charge of the Cal. division of the U. S. Geol. Survey. He was special agent of the U. S. census 1880, special agent to investigate precious metal industries 1882, and geologist with the army in the Phil-

ippines 1898-9. He is now in charge of the division of chemical and physical research in the U. S. Geological Survey. His publications include: *Geology of the Comstock Lode; Statistics and Technology of the Precious Metals* (with S. F. Emmons); *Geology of the Quicksilver Deposits of the Pacific Slope* (1888); *Atomic Weight Determinations* (1880); *Gold Fields of Alaska* (1898); *Gold Fields of Southern Appalachians* (1895); *Gold Fields of South Africa* (1897); *Geology of the Philippine Islands* (1901); *Experiments on Slaty Cleavage* (1904); etc.

BECKER, *běk'ėr*, GOTTFRIED WILHELM: 1778-1854, Jan. 17; b. Leipsic: German author. He entered the univ. and settled in Leipsic as a practicing physician and a writer of medical works, several of which reached many editions. The wars of the period turned his attention to history and modern languages, and in 1833 B. entirely relinquished practicing medicine, and became a fertile and admired contributor to many of the more popular branches of literature. Among many attractive vols. of travels in his own country are *Tour to the Harz, Sketches of Southern Germany*, etc. His historical writings, which are not less numerous, narrate chiefly the events of his own time. Among them are *Andreas Hofer, Egypt as it Now Is, The Fate of Spain in Modern Times*, etc. All his works have been published at Leipsic.

BECK'ER, JOHN PHILIPP: a German radical politician; b. 1809, March 19, at Frankenthal, in the Palatinate on the Rhine; d. at Geneva, 1886, Dec. 9. He was brought up as a brushmaker. The French revolution of 1830, July, gave him a political bias, and he took part in the political agitations of the day, in consequence of which he was imprisoned; but in 1833 he was released. In 1837, he settled in Switzerland, taking a part in several radical publications, and organizing, 1838, 1845, volunteer corps. In the autumn of 1847, he was summoned to the military bureau at Berne, and being chosen adjutant of Ochsenbein's division, fought against the Sonderbund with acknowledged bravery. Upon the failure of Hecker's attempt to revolutionize Baden, 1848, B., who had organized troops for his support, returned to Switzerland, to plan an expedition of German and Swiss auxiliaries, to support the cause of freedom in Rome and Sicily. Their movements being frustrated, he led his troops in the summer of 1849 into the Palatinate and the Duchy of Baden, where a rising had taken place and was prominent in many engagements. Subsequently, he settled in Geneva, and engaged successfully in commerce. A history of the revolution of 1849, in southern Germany, was published by him and Esselen. In his later years B. was a leader of the socialist party and an active agitator on behalf of the association known as the 'International.'

BECK'ER, KARL FERDINAND: 1775-1849; b. Liser, in the old electorate of Treves: German philologist. At first a teacher, he ultimately settled as a medical practitioner at

Offenbach. Here he educated his own children with such success that several families induced him to take charge of theirs, and thus his house was converted into an academy (1823), which he conducted till his death. This gave scope to his early predilection for linguistic studies, to which his scientific training led him to give a quite new direction. B. contemplates language as an *organism*, pervaded by strict logical laws. From this point of view, he wrote his *Deutsche Grammatik* (2d ed., 1870). He neglects too much the historical development of language, and thus, as might be expected, comes at times into conflict with the results of comparative philology; yet his work is valuable for its logical consequence, and for its leading idea of organism in language. Besides a *Schulgrammatik* (10th ed., 1872), an outline of his larger work, he published several other treatises on the German language.

BECKER, Rudolph Zacharias: German author: b. Erfurt, 1752, April 9; d. 1822, March 28. He first became known by an essay on the theme, 'Is it useful to deceive the people?' which gained a prize from the Berlin Academy of Sciences in 1799. His theory was that happiness depended on the gratification of an innate desire for improvement. In 1782 he took charge of a school at Dessau and published a journal for youth. A work in two volumes, entitled *A Little Book of Needful Help; or, Instructive Tales of Joy and Sorrow in the Village of Mildheim*, became such a favorite with the public that over 500,000 copies were soon disposed of. He also produced other works and journals, and the extensive transactions in them led him, in 1797, to set up a publishing and bookselling establishment at Gotha, which is still continued by his son. On 1811, Nov. 30, he was arrested by Davoust on suspicion of conspiring against Napoleon, and was imprisoned at Magdeburg till 1813, April. On this imprisonment he wrote a book.

BECK'ER, Wilhelm Adolf: 1796-1846, Sept. 30; b. Dresden, d. Meissen: distinguished German author. In 1816, he came to Leipsic, where he studied theology, and more particularly philology. In 1840, he travelled through Italy; in 1842, was appointed prof. of archæology at the Univ. of Leipsic. His lively fancy, aided by a thorough knowledge of the classic languages, enabled him to make a novel use of antiquity. In his *Charicles* (Leip. 1840), he ventured to reproduce the social life of old Greece; and in his *Gallus* (Leip., 1838), to give sketches of the Augustan age at Rome. The learning which he has contrived to stuff into his picturesque sentences is marvellous, not to speak of the quantity buried in his *excursus*, or disquisitions, which, in the English translation of the works by Metcalfe, are transferred from the text to the end of the volumes. Lockhart's *Valerius* is the only thing in English literature which corresponds to these compositions of the German author. B.'s treatise, *De Comicis Romanorum Fabulis* (Leip., 1837), is a valuable contribution to the history of Roman dramatic poetry. His most important work, in a scholastic point of view, is his *Hand-book of Roman An-*

tiquities (1843–1846), which, after his death, was continued by Marquardt.

BECKERATH, *bek'kĕh-rât*, HERMANN VON: 1801, Dec. —1870, May; b. and d. Krefeld, Prussia: one of the remarkable public characters of Germany. He sprang from a commercial family, and was a successful banker; but he interested himself also in jurisprudence and politics. The accession of Frederick-William IV. to the throne roused B. to a sense of the political condition of his country, and he devoted himself to work out its constitutional freedom. In 1843, he was elected representative of his native town in the provincial diet, and continued for several years to take a prominent part in Prussian politics. He was a deputy in the national assembly which sprang up in the eventful year 1848, and held its sittings at Frankfort. His eloquence exercised considerable influence on this assembly. He was appointed minister of finance, and shortly after called to Berlin, to construct a cabinet; but in this he failed. His strictly constitutional advice was not apparently agreeable to the court, and he returned to Frankfort. An advocate for German unity, it was he who made use of the expression: 'This waiting for Austria is death to the union of Germany.' But he refused to assent to any revolutionary measure. When the retrograde movement set in, he resigned the posts he held under government, but continued, as a member of the second Prussian chamber, a vigorous opposition to the Manteuffel ministry, which had deserted the cause of German unity. He withdrew from the arena of political strife in 1852.

BECKET, n. *bĕk'ĕt:* among *seamen*, a piece of rope placed to confine another rope or a spar; a small circle or hoop of rope, or a wooden bracket, used as a handle.

BECK'ET, THOMAS À, Archbishop of Canterbury: 1119 —70, Dec. 29; b. London: son of a merchant. The romantic story which makes his mother a Saracen is doubtful. He studied theology at Oxford and Paris, afterwards law at Bologna, and at Auxerre, in Burgundy. Having been recommended to Henry II. by Theobald, Abp. of Canterbury, who had had experience of his abilities, B. was promoted to the office of high chancellor, and thus (according to Thierry) resuscitated the hopes of the English as the first native Englishman, since the Conquest, who had filled any high office. His duties as high chancellor were numerous and burdensome, but he discharged them vigorously. He was magnificently liberal in his hospitality. Henry himself did not live in a more sumptuous manner. As yet, B. seems to have regarded himself as a mere layman, though in fact he was a deacon; but in 1162, when he was created Abp. of Canterbury (an office which, as it then involved the abbacy of the cathedral monastery, had never but twice before been held by any but a monk or canon-regular), a remarkable change became manifest in his whole deportment. He resigned the chancellorship, threw aside suddenly his luxurious and courtly habits, assumed an austere religious character, exhibited his liber-

ality only in his 'charities,' and soon appeared as a zealous champion of the church against all aggressions by the king and the nobility. Several noblemen and laymen were excommunicated for their alienation of church property. Henry II., who, like all the Norman kings, endeavored to keep the clergy in subordination to the state. convoked the nobility with the clergy to a council, 1164, at Clarendon (near Salisbury), where the so-called 'constitutions' (or laws relative to the respective powers of church and state) were adopted. To these, the primate, at first, declared he would never consent; but afterwards, through the efforts of the nobles, some of the bishops, and, finally, of the pope himself, he was induced to give his unwilling approbation. Henry now began to perceive that B.'s notions and his were utterly antagonistic, and clearly exhibited his hostility to the prelate, whereupon B. tried to leave the country. For this offense the king charged B. with breach of allegiance, in a parliament summoned at Northampton, 1164, confiscated his goods, and sequestered the revenues of his see. A claim was also made on him for not less than 44,000 marks, as the balance due by him to the crown when he ceased to be chancellor. B. appealed to the pope, and next day, leaving Northampton in disguise, fled to France, where he spent two years in retirement at Pontigny, in Burgundy. The French monarch and the pope, however, now took up his cause. B. went to Rome, pleaded personally before his holiness, who reinstated him in the see of Canterbury. B. now returned to France, whence he wrote angry letters to the English bishops, threatening them with excommunication. Several futile efforts were made to reconcile Henry and B.; but at length, 1170, a formal agreement was come to at Fretville, on the borders of Touraine. The result was, that B. returned to England, entering Canterbury amid the rejoicings of the people, who were unquestionably proud of B., and regarded him—whether wisely or not—as a shield from the oppressions of the nobility; but he soon manifested all his former boldness of opposition to royal authority. At last, it is said, the king, while in Normandy, expressed impatience that none of his followers would rid him of an insolent priest. The fatal suggestion was immediately understood, and carried into effect by four barons, who departed by separate ways for England. On the evening of 1170, Dec. 29, they entered the cathedral, and having failed in an attempt to drag him out of the church, there slew B. before the altar of St. Benedict, in the north transept. Henry was compelled to make heavy concessions to avoid the ban of excommunication. The murderers, having repaired to Rome as penitents, were sent on a pilgrimage to Palestine; and, two years after his death, B. was canonized by Pope Alexander III., and the anniversary of his death was set apart as the yearly festival of St. Thomas of Canterbury. In 1220, his bones were raised from the grave in the crypt where they had been hastily buried two days after his murder, and were by order of King Henry III. deposited in a splendid

shrine, which for three centuries continued to be the object of one of the great pilgrimages of Christendom, and still lives in English literature in connection with Chaucer's *Canterbury Tales*. At the Reformation, Henry VIII. despoiled the shrine, erased B. name from the calendar, and caused his bones to be burnt and scattered to the winds. It is extremely difficult to estimate properly the character of Becket. We do not know what his ultimate aims were, whether, as some suppose, they were patriotic, i. e., *Saxon*, as opposed to *Norman*, or, as others believe, purely sacerdotal. At all events, the means he used for the attainment of them was a despotic and irresponsible ecclesiasticism. He admitted nothing done by churchmen to be secular, or within the jurisdiction of civil courts; not even murder or larceny. Fortunately, the Plantagenets were as dogged believers in their own powers and privileges as B. in those of the church; and by their obstinate good sense, England was kept wholesomely jealous of the pretensions of Rome. See Dr. Giles's *Vita et Epistolæ S. Thomæ Cantuariensis;* Canon Morris's *Life of St. Thomas Becket;* Hook's *Lives of the Archbishops of Canterbury;* and Thompson's *Thonas Becket*.

BECK'ETT, Arthur William, à, English journalist and novelist (son of Gilbert Abbot à Beckett): 1844, Oct. 25. Beside fulfilling other journalistic engagements he was on the staff of *Punch*, 1874-1902, edited the *Sunday Times* 1891-5; *the Naval and Military Magazine*, 1896, and *John Bull*, 1902-3. In addition to several comedies he has published *Comic Guide to the Royal Academy*, with his brother Gilbert (1863-4); *Fallen Amongst Thieves* (1869); *Our Holiday in the Highlands* (1874); *The Shadow Witness* and *The Doom of St. Quirec*, with Burnand (1875-6); *The Ghost of Grimstone Grange* (1877); *The Mystery of Mostyn Manor* (1878); *Traded Out*; *Hard Luck*; *Stone Broke*; *Papers from Pump Handle Court, by a Briefless Barrister* (1884); *Modern Arabian Nights* (1885); *The Member for Wrottenborough* (1895); *Greenroom Recollections* (1896); *The Modern Adam* (1899); *London at the End of the Century* (1900); *The A' Becketts of Punch* (1903); etc. Died 1909, Jan. 14.

BECKFORD, *bĕk'ford*, William: 1760-1844, May 2; born at Fonthill, Wiltshire, England. When he was about nine years of age, his father died, and he inherited the larger portion of an enormous property, consisting for the main part of estates in Jamaica, and of the estate of Fonthill, in Wiltshire. Young B. evinced unusual intellectual precocity; for in 1780 he printed a satirical essay, entitled *Biographical Memoirs of Extraordinary Painters*, in which he does not spare living artists, and assails the cant of criticism with the polished weapon of his wit. In 1778, he met Voltaire at Paris. Two years thereafter, he started on his first great continental tour, and spent twelve months in rambling through Flanders, Germany, and Italy. In 1782 he made a second visit to Italy, and in

1787 he wandered through Portugal and Spain. In 1784, he entered parliament as one of the members for Wells. In the same year he published *Vathek* in French. Immediately on its publication, *Vathek* was translated into English; B. professes never to have known the translator, but thought his work well done. In 1790 he sat in parliament for Hindon; in 1794 he accepted the Chiltern Hundreds, and again left England. He fixed his residence in Portugal, purchased an estate near Cintra, and occupied for a time that 'paradise' which Byron commemorated in *Childe Harold*. Tormented by unrest, he returned to England; and in 1801 the splendid furniture of Fonthill was sold by auction, and the next year his valuable collection of pictures was disposed of in London. These dispersions were no sooner made than he began a new collection of books, pictures, furniture, curiosities, and proceeded to erect a new building at Fonthill, the most prominent feature of which was a tower above 260 ft. high. B. resided at Fonthill till 1822, when, in one of those strange vagaries of feeling of which his life was so full, he sold the estate and house, with all its rare and far-gathered contents, to Colonel Farquhar for £350,000. On the sale of Fonthill, B. removed to Bath, and immediately proceeded to erect another lofty building, the plan of which also included a tower, but this time not more than 100 ft. high. He bought Gibbon's library at Lausanne, to amuse himself when he happened to be in that neighborhood. He went there; read in the fierce way that he wrote, three days and two nights at a sitting; grew weary of his purchase; and handed it over to his physician, Dr. Scholl. Up till 1834 he had published nothing since *Vathek*, but in that year the literary silence of half a century was broken by the appearance of a series of letters, entitled *Italy, with Sketches of Spain and Portugal*, in two vols. In the same year he republished his *Memoirs of Extraordinary Painters;* and in 1835 he issued another volume, entitled *Recollections of an Excursion to the Monasteries of Alcobaça and Batalha*, made 1794, June.

BECKHAM, John Crepps Wickliffe: American statesman: b. Bardstown, Ky., 1867. In 1893 he began the practice of law; elected to the Kentucky legislature 1894-7; speaker 1898; elected lieutenant-governor 1899, and became governor upon the death of Goebel, 1900, Feb. 3; elected governor on the Democratic ticket in the fall of the same year, and again in 1904.

BECKITE, n. *bĕk'īt* [named after *Dr. Beeke*, Dean of Bristol, by whom it was first discovered]: a mineral, a variety of pseudomorphous quartz. It consists of altered coral in which a portion of the original carbonate of lime may yet be detected, though most of it has been replaced by chalcedony. It occurs in Devonshire, Eng.

BECKMANN, *bĕk'mân*, Johann: 1739, June 4—1811, Feb. 4; b. Hoya, Hanover; d. Göttingen. German author, on natural history and agriculture. He was for about two years professor of physics and natural history in

St. Petersburg; afterwards he received instructions from Linnæus. In 1766, he was appointed prof. of philosophy, and in 1770, ordinary prof. of political economy at Göttingen. He was the first German author who wrote on agriculture in a scientific style. Among his works are: *Principles of German Agriculture* (6th ed. 1806), *Introduction to Technology* (5th ed. 1809).

BECKON, v. *bĕk'n* [from BECK 1]: to make a sign to another by nodding, or by a motion of the hand or finger. BECKONING, imp. *bĕk'nĭng*. BECKONED, pp. *bĕk'nd*.

BECLOUD, v. *bĕ-klowd'* [*be*, and *cloud*]: to obscure; to dim. BECLOUD'ING, imp. BECLOUD'ED, pp.

BECKWITH, *bĕk'wĭth*, JOHN WATRUS, S.T.D: bishop of the Prot. Episc. Chh.: 1831, Feb. 9—1890, Nov. 23; b. Raleigh, N. C. He graduated at Trinity Coll., Hartford 1852, was ordained deacon 1854, priest 1855. He settled in Md., but at the outbreak of the civil war, removed to Miss. and thence to Ala. He became rector of Trinity Church, New Orleans, at the close of the war, and while in that pastorate was elected bp. of Ga. In 1868 he was consecrated bp. at St. John's Church, Savannah, Ga. B. gained the reputation of having no superior in the Prot. Episc. Chh. for pulpit eloquence and power; and the notable growth of that church in Ga. has been attributed to him.

BECOME, v. *bĕ-kŭm'* [AS. *becuman*, to attain to, to befall, to suit: O. H. G. *piquëman;* M. H. G. *bekomen*, to happen, to befall; hence Ger. *bequem*, fit, proper, convenient]: to pass from one state to another; to befit; to sit gracefully. BECOM'ING, imp: ADJ. appropriate; graceful. BECAME', pt. BECOM'INGLY, ad. *-lĭ*, after a becoming or suitable manner. BECOM'INGNESS, n. the state or quality of being becoming or suitable; congruity.—SYN. of 'becoming: decent; proper; fit; seemly; suitable; just; right; appropriate; congruous; graceful; befitting.

BECQUEREL, ALEXANDRE EDMOND: 1820, March 20—1891, May 12; b. Paris, son of Antoine César. He received the cross of the Legion of Honor 1851; and was appointed prof. of physics in the *Conservatoire des Arts et Métiers* 1853. He was a member of the *Académie des Sciences*. To his joint labors with his father are due interesting researches concerning the solar spectrum and the elements of electric light (*Comptes Rendues de l'Académie*, 1839-40); *Elĕments de Physique Terrestre et de Météorologie* (1847); *Mémoires sur les Lois qui président à la Decomposition électro-chimique des Corps* (1849); and a *Note sur le traté des Lignes Isothermes en France; des Recherches sur les Effets Electriques* (1852 and 1855); and *Les Forces physico-chimiques*.

BECQUEREL, *bĕk-rĕl'*, ANTOINE CÉSAR: 1788, March 8—1878, Jan. 19; b. Chatillon-sur-Loing, dept. of Loiret: French physicist. In 1808, he entered the French army as an officer of the engineers, and served with distinction, and at the peace of 1815, retired from the service, to pursue scientific studies. In 1819, he published a volume of geo-

logical and mineralogical researches, after which his attention was given to electricity and magnetism. While studying the physical properties of yellow amber, B. had occasion to make experiments on the liberation of electricity by pressure. This led him to investigate the laws by which the phenomena of liberation are governed in chemical action. The result of his inquiries was the overthrow of Volta's theory of contact, and the construction, by him, of the first constant pile. He next discovered a method of determining the internal temperature of human and animal bodies, and by physiological applications demonstrated that, when a muscle contracts, there is a development of heat. B. is one of the creators of electro-chemistry. His labors in this branch of science opened for him, 1829, the door of the *Académie de Sciences*. Since 1828, he had begun to apply electro-chemistry in the reproduction of mineral substances, and in the treatment by the humid way of silver, lead, and copper ores. In 1837, he was elected a member of the Royal Soc. of London. Among his works were the *Traité de l' Électricité et du Magnétisme; Traité de Electrochimie; Traité de Physique; Éléments de Physique terrestre et de Météorologie.*

BECQUET, *bā-kā'*, ANTOINE: 1654—1730; b. Paris: biographer. He joined the order of monks called Celestines, became librarian of his convent, and became famous for extensive knowledge. His principal work is: *Gallicæ Celestinorum congregationis, ordinis S.-Benedicti, monasteriorum fundationes, virorumque vita aut scriptis illustrium elogia historica*, etc. (Paris, 1719, quarto).

BECRI-MUSTAFA, *bĕk'rē-mŭs'ta-fa:* 17th c.: a favorite of the sultan Amurath IV., who found him drunk on the streets, brought him home, and made him his companion both in his debauchery and in his government. He became, nevertheless, one of the best counselors of the celebrated and warlike sultan, as well as a brave and bold commander. He distinguished himself especially at the siege of Erivan and of Bagdad (1638), and died a short time before his master, who caused him to be buried with great pomp between two tuns, and became himself a mourner.

BECSE, *bĕt'shė*, NEW: market-town of Austria, about four m. e. from Old Becse. Pop. (1901) 7,752.

BECSE, OLD: market-town of the Austrian empire, in the Servian Woiwodschaft, 24 m. n.n.e. from Neusatz. Pop. (1890) 16,754; (1901) 18,865.

BECSKEREK NAGY, *bātsh-kā-rĕk' nŏdj*, or GREAT BECSKEREK: important market-town of Hungary, co. of Torontal, on the left bank of the Bega, about 45 m. s. w. of Temesvar, with which place it is connected by canal. Pop. abt. 22,000.

BED, n. *bĕd* [Icel. *bedr*; Ger. *bett*; Goth. *badi*, a bed]: something on which to sleep; a couch; a tick or mattress; a bedstead; a mass of matter considered as the support or

resting place of something, as the bottom of the ocean, or the channel-bottom of a river; a plot of ground in a garden; a layer, in *geol.*, a stratified mass of rock; in *mech.*, a portion of a structure or of a machine that supports something, sometimes a foundation, sometimes a heavy moving part that supports other parts, as the bed of a planer or of a printing-press; in *masonry*, a course of stone at the foot of a wall; also, a layer of mortar for a course. V. to lie; to sleep; to place in a bed; to plant out or set out in a plot of ground. BED'DING, imp. BED'DING, n. materials of a bed; bed-clothes. BED-BOLT, n. a bolt for a bedstead frame, having a square head usually sunk into the frame; also any bolt for the bed of a machine. BED-BUG, n. the *Cimex lectularius:* see PARASITES. BED-CHAMBER, n. *-chām'bėr*, a room in which there is a bed. BED'CLOTHES, n. plu. the blankets, sheets, etc., of a bed. BED'FAST, a. bedridden. BED'FELLOW, n., one who lies in the same bed. BED-HANGINGS, curtains for a bed. BED-KEY, n. a bed-wrench. BED-LATHE, n. a lathe having a bed or framework on which the two opposed stocks and other mechanism are supported—the commonest form of lathe. BED-LOUNGE, n. a lounge that unfolds centrally so as to form a bed of twice the width of the lounge. BED-MOLDINGS, n. pl. moldings of a cornice in Grecian and Roman architecture immediately below the corona; called also BED-MOLD and BEDDING MOLDINGS. BED-PAN, n. a warming-pan for a bed, or a vessel for use by one confined to a bed. BED-PLATE, n. a heavy plate or casting that constitutes the foundation of a large machine. BED-PRESSER, n. one who wastes time by lying abed. BED-POST, n. a post for a bed. BED-STEAD, n. *-stĕd* [AS. *bed*, a bed; *stede*, a place, station]: the wooden or metal framework of a bed. BED-STOCK, a bedstead. BED-ROCK, n. the rock underlying the ground surface; hence, the acme of solidity. BED'ROOM, n. a room for sleeping. BED-SORE, n. see BEDSORES. BED-SPREAD, n. a counterpane or cover for a bed. BED-SPRINGS, n. a set of springs grouped to form a spring-mattress for a bed. BED-STRAW, n. see in vocabulary place. BED-STONE, n. the lower stationary stone of a pair of millstones. BED'TICK, n. a case or sacking arranged to be filled with straw, etc., to make a soft mattress for a bed. BED-VEIN, n. a vein of ore that has the characteristics of a bed. BED'WAY, n. a horizontal streak on granite, that suggests stratification. BED-WRENCH, n. a socket-wrench, so called because used to turn the heads of bed-bolts when sunk in the bolt-hole. BEDDER, *bĕd'dėr*, the nether stone in an oil-mill. BEDDING-PLANTS, n. plants intended to be set in beds in the open air. BEDDING-STONE, n. in *bricklaying*, a level marble slab on which the rubbed side of a brick is tested to prove the truth of its face. BED OF JUSTICE [a translation of F. *Lit de Justice*]: in *F. hist.*, the king's presence in parliament seated on his *bed* or throne in order to overawe and compel its members to register his decrees. BROUGHT TO BED, delivered of a child. FROM

BED AND BOARD, a legal separation of husband and wife short of a divorce.

BED: an article of household furniture on which to sleep. Anciently, in Palestine, the B. seems to have been a simple kind of couch for reclining on during the day, and sleeping on at night, readily removable from place to place, as is referred to in different parts of Scripture. The ancient Greeks had an elegant kind of bed in the form of open couches; they rested on a framework with posts; their mattresses were stuffed with wool or feathers; and they had coverings of a costly nature. The Romans had latterly beds of great richness and magnificence. They were of two kinds—the *lectus tricliniaris*, or couch for reclining upon at meals; and the *lectus cubicularis*, or B. placed in bed-chambers for sleeping during the night. In eastern countries, at the present day, beds are for the most part simple couches or mattresses, which can be easily rolled up and carried away. In India, these couches are called *charpoys*.

Throughout the continent of Europe, beds are of the open couch form, suitable in width for one person. They consist of a frame or bedstead, more or less ornamental, bearing one or two hair or wool mattresses; they are often provided with curtains, which depend from the ceiling of the room. In French hotels, such beds, neatly done up, are seen in sitting rooms. In Germany, there is a common practice of placing large flat bags of down above the other coverings of beds, for the sake of warmth; and sometimes a bed of down altogether supplies the place of blankets. Modern B. are often constructed with a framework of iron piping or light iron rods; when these are more or less covered with brass it is called a *brass* B. On the framework or bedstead there usually rests a sheet of stretched woven wire, called a wire mattress, and on this is placed a mattress of hair, wool, cotton, shucks, or the like. B. of wood are less common than formerly, being regarded as affording more opportunity for the lodgment of bedbugs, than do iron beds. A *folding* B. has commonly a wooden framework, and folds up so that it resembles a chiffoniere, bureau, or other common article of furniture, often exposing a large mirror. They are used to economize space, as in flats, or to transform the appearance of a bedroom, so that it may serve for the reception of a visitor. The *trundle* B. is a little low B. for a child, that may be run under a large B. when not in use. A *cot*-B. is one having crossed legs that fold up, a stout canvas serving as the support of the mattress, if any is used. The old English four-poster B. is still used to some extent.

BED, or STRATUM: a layer of sedimentary rock of similar materials and of some thickness, cohering together so as to be quarried and lifted in single blocks. Beds are often composed of many fine laminæ or plates. The laminæ are the results of intermissions in the supply of materials, produced by such causes as the ebb and flow of the tide, river-floods, or the more or less turbid state of the water

under which they are deposited. When the intervals between the supply of materials were short, the numerous laminæ closely adhere, and form a bed cut off from the superior deposit, by the occurrence of a longer interval, during which the bed became consolidated more or less before the next was deposited. When the lamination is obscure, or not distinct from the stratification, it may indicate that the materials had been supplied without any intermission.

BEDA, *bē'da*, or BEDE, *bēd* (surnamed, on account of his learning, piety, and talents, VENERABLE): abt. 673-735, May 26: the greatest name in the ancient literature of Britain, and probably the most distinguished scholar of his times in the world. The place of his birth is in dispute among antiquaries, but is commonly believed to have been in what is now the parish of Monkton, near Wearmouth, Durham. In his seventh year he entered the neighboring monastery of St. Peter, at Wearmouth, where he remained 13 years, and was educated under the care of the Abbot Benedict Biscop, and his successor, Ceolfrid. His religious instructor was the monk Trumberct; his music-master, John, chief-singer (*archicantor*) in St. Peter's Church, Rome, who had been called to England by the Abbot Benedict. After these studies at Wearmouth, B. removed to the twin-monastery of St. Paul at Gyruum (now written Jarrow), founded 682; here he took deacon's orders in his nineteenth year, and was ordained priest in his thirtieth, by John of Beverley, then Bishop of Hexham. In the shelter of his quiet and sacred retreat, while the tempest of barbaric strife raged without, and the hearts of all men in England were torn by sanguinary passions, B. now gave his life to such literature as was possible in those days, including Latin and Greek, and at least some acquaintance with Hebrew, medicine, astronomy, and prosody. He wrote homilies, lives of saints, hymns, epigrams, works on chronology and grammar, and comments on the books of the Old and New Testament. His calm and gentle spirit, the humanizing character of his pursuits, and the holiness of his life, present a striking contrast to the violence and slaughter which prevailed in the whole island. To none is the beautiful language of Scripture more applicable—'a light shining in a dark place.' When laboring under disease, and near the close of life, he engaged in a translation of St. John's Gospel into Anglo-Saxon, and dictated his version to his pupils. He was buried in the monastery of Jarrow: long afterwards (in the middle of the 11th c.), his bones were removed to Durham. His most valuable work is the *Historia Ecclesiastica Gentis Anglorum*, an ecclesiastical history of England, in five books, to which we are indebted for almost all our information on the ancient history of England down to 731. B. gained the materials for this work partly from Roman writers, but chiefly from native chronicles and biographies, records, and public documents, and oral and written communica-

tions from his contemporaries. King Alfred translated it into Anglo-Saxon. In chronology, the labors of B. were important, as he first introduced the Dionysian reckoning of dates in his work, *De Sex Ætatibus Mundi*, which served as a basis for most of the mediæval chroniclers of leading events in the world's history. Among the editions of B.'s History are those at Strasburg about 1500; by Smith (Cambridge, 1722); Stevenson (Lond. 1838); Hussey (Oxf. 1846); in the *Monumenta Historica Britannica* (Lond. 1848); that included by Dr. Giles in his ed. of the whole works of B. (6 vols., 1844); that at the Clarendon Press (1869); and that by Holder (Freiburg, 1882). Entire editions of B.'s writings have been published in Paris (1544-54), Basel (1563), and Cologne (1612 and 1688). English versions of his *Ecclesiastical History* were published by Stapleton, 1565; by Stevens, 1723; by Hurst, 1814; by Wilcock, 1818; and by Giles, 1840. See Gehle's *De Bedæ Venerabilsi Vita et Scriptis;* Surtee's *History of Durham*, vol. ii.

BEDABBLE, v. *bĕ-dăb'bl* [*be*, and *dabble*]: to sprinkle with; to cover with. BEDABBLING, imp. *bĕ-dăb'lĭng*. BEDABBLED, pp. *bē-dăb'ld*.

BÉDARIEUX, *bā-dâ-rĕ-ėh':* town of France, dept. Hérault; on the river Orb, well built, and second to none of its size in industry. The people are engaged in the manufacture of fine and coarse cloths, stuffs, cotton and woolen stockings, hats, paper, oil, soap, leather, etc. Pop. 5,802.

BEDAUB, v. *bĕ'dawb'* [*be*, and *daub*]: to besmear; to sprinkle; to soil with anything thick and dirty. BEDAUB'ING, imp. BEDAUBED, pp. *bĕ-dawbd'*.

BEDAZZLE, v. *bĕ-dăz'zl* [*be*, and *dazzle*]: to confuse the sight by a too strong light; to make dim by lustre or glitter. BEDAZ'ZLING, imp. *-ling*. BEDAZ'ZLED, pp. *-zld*. BEDAZ'ZLINGLY, in a bedazzling manner.

BED'CHAMBER, LORDS OF THE: officers in the British royal household, twelve in number, who, in the reign of a king, wait in turn upon the sovereign's person. They are under the groom of the stole, who attends his majesty only on state occasions. There are also thirteen grooms of the B., who take their turns of attendance. The salary of the groom of the stole is £2,000; of the lords of the B., £1,000; and of the grooms, £500 a year. These offices in the reign of the queen are performed by ladies. Corresponding to the groom of the stole is the mistress of the robes, and to the grooms of the B. are B. women. These offices are objects of high ambition, from the access they give to the person of the sovereign, and are for the most part filled by 'the prime nobility of England.' They are not usually vacated on a change of ministry, and Sir Robert Peel's departure from the usual etiquette on this point, 1839, excited no small commotion.

BEDDERN, *bĕd'dėrn:* a refectory.

BEDDOES, Lovell Thomas: 1803, July 20—1849, Jan. 26; b. Rodney Place, Clifton, Eng.: eldest son of Dr. Thomas, and of Anna, third dau. of Richard Lovell Edgeworth, of Edgeworthstown, Ireland, sister of Maria Edgeworth, the novelist. He studied at the Bath grammar school; in 1817, he removed to the Charter House; and in 1820, May, he entered as a commoner at Pembroke College, Oxford. In 1821, he published the *Improvisatore*, on which he looked with no favor at a later period. In 1822, he published *The Bride's Tragedy*, which achieved for its author a great reputation. In 1824, he went to Göttingen to study medicine, and thereafter lived in Germany and Switzerland. While engaged at Frankfort (1847) in dissecting, he received a slight wound, and his health soon began to fail. In 1848, at Basel, he fell from his horse, and injured his leg; and amputation was followed by death. In Germany, B. was engaged at intervals in the composition of a drama entitled *Death's Jest-book*. This work with his other manuscripts, chiefly poetry, he at his death confided to a friend for publication at discretion; and his poetical works, with memoir, appeared in two vols., 1851. These dramatic fragments are peculiar. The author shows no power of characterization, no ability in the conduct of a story; and, on the other hand, the crush of thought and image, the tone of music, and the depth of color, are wonderful. Mr. B. never could have become a dramatist, and of this he seems to have become aware. His works pall with splendor, and are monotonous by very richness. They are like a wilderness where nature has been allowed to pour herself forth in all her waste and tropical excess, unrestrained by a pruning hand, and unpierced by any path.

BEDDOES, *bĕd'dōz*, Thomas: 1760-1809; b. Shiffnall, Shropshire. He studied at Oxford and Edinburgh, making varied attainments in botany, mineralogy, geology, chemistry, and in languages. In 1785, he published a translation of Bergman's *Essays on Elective Attractions*, with valuable original notes. In 1787, he was appointed to the chemical lectureship in the Univ. of Oxford. Here his lectures became exceedingly popular; but his unconcealed sympathies with the French revolutionary party in England appear to have rendered his post so uncomfortable that he resigned it, 1792, and retired into the country. While in retirement he wrote his work *On the Nature of Demonstrative Evidence, with an Explanation of Certain Difficulties occurring in the Elements of Geometry*, which was intended to show that mathematical reasoning proceeds entirely on the evidence afforded by the senses, and that geometry is based on experiment. Several patriotic pamphlets followed, and the *History of Isaac Jenkins*, in which he laid down, in a popular style, rules of sobriety, health, etc., for the benefit of the working classes. Of this work, 40,000 copies were sold in a short time. In 1798, after having spent considerable time in studying the use of artificial or medicated gases in the cure of diseases,

especially consumption, aided by his father-in-law, Mr. Edgeworth, and pecuniarily assisted by his friend, Thomas Wedgwood, he opened a pneumatic hospital at Bristol. This institution did not succeed in its main object, which was to show that all diseases being, as B. maintained, referrible to an undue proportion or deficiency of some elementary principle in the human organism, could be cured by breathing a medicated atmosphere; and B., whose zeal had abated, retired from it in 1808, about a year before his death. The only results of the enterprise were several works by B. on the application of medicated air to diseases, and the introduction to the world of Davy (afterwards Sir Humphry), who was the superintendent of the institution. Sir Humphry Davy says of B.: 'He had talents which would have exalted him to the pinnacle of philosophical eminence, if they had been applied with discretion.'

BEDE, n. *bēd:* among *miners*, a kind of pickax used for separating the ores from the rocks in which they are embedded.

BEDE, Venerable: see Beda.

BEDEAU, *bĕ-dō′*, Marie Alphonse: 1804, Aug.—1863; b. Vertou, near Nantes: French general. In the Belgian campaign of 1831-2, he was aide-de-camp to General Gérard. In 1836, he was sent to Algeria, as commandant of a battalion of the Foreign Legion. Here he acquired his great military reputation. After studying at La Flèche, and St. Cyr. he entered the army, 1825, and rose to be general of brigade.

When the revolution of February broke out, B. was commissioned to suppress the insurrection. This he found impossible, but his conduct has been severely blamed. Under the Provisional Government he was in command of the city of Paris. On the formation of the Constituent Assembly, he was named vice-pres. and always voted with the republican party. With Cavaignac, Lamoricière, and others, he was arrested, 1851, Dec. 2, and went into exile. B's religious convictions were so strong as to give rise to the groundless rumor that he had entered into holy orders in the Rom. Cath. Church.

BEDECK, v. *bĕ-dĕk′* [*be*, and *deck*]: to adorn; to grace. Bedeck′ing, imp. Bedecked, pp. *bĕ-dĕkt′*.

BEDEGUAR, or Bedegar, n. *bĕd′e-gâr* [Pers. *bâdâward*, a kind of white thorn or thistle]: a gall (q. v). or spongy excrescence found on rose-bushes, caused by the puncture of a small insect: it is common on the sweet-brier, upon which account it is sometimes called Sweet-brier Sponge. It is produced sometimes by *Cynips rosæ*, sometimes by other species of gall insect. It is usually of a roundish shape, often an inch or more in diameter, its nucleus is spongy and fibrous, containing numerous cells, in each of which is a small larva; externally it is shaggy, being covered with moss-like branching fibres, which are at first green, afterwards purple or red. It was formerly in some

repute as a diuretic and as a remedy for stone; it has more recently been recommended as a vermifuge, and as a cure for toothache.

BEDEHOUSE, n. *bēd'hows* [AS. *bead*, a prayer]: a charity house where the poor prayed for their benefactors. BEDESMAN: see under BEAD.

BEDELLUS, n. *bĕ-dĕl'ŭs*, or BEDEL, n. *bē'dĕl* [mid. L. *bedellus:* AS. *bydel:* It. *bidello*]: a higher beadle or officer of a court or university. BEDELRY, n. *bē'dĕl-rĭ*, the extent of a beadle's office; in *Scot.*, a church officer is called a BEADLE, BEDRAL, or BETHRALL.

BEDEVIL, n. *bĕ-dĕv'l:* to treat with diabolical violence or ribaldry. BEDEV'ILLED, pp. BEDEVILLING, imp.

BEDEW, v. *bĕ-dū'* [*be*, and *dew*]: to wet, as with dew; to moisten gently. BEDEW'ING, imp. BEDEWED, pp. *bĕ-dūd'*. BEDEW'ER, n. one who.

BED'FORD, *bĕd'ford* [Saxon, *Bedcanford*, town of the ford]: chief town of Bedfordshire; on the Ouse (navigable thence to the sea, a distance of 74 m.), about 49 m. n.n.w. of London by rail, and in the midst of a broad expanse of rich pasture, wheat, and barley lands. The town is clean and well paved, and the drainage has been recently greatly improved by the board of health. The charitable and educational institutions of B. are due mostly to Sir W. Harpur, alderman of London, 1561, who founded a free school, and endowed it with 13 acres of land. The enormous increase in the value of the property enables the trustees to maintain grammar, modern, and preparatory schools for boys, the same class of schools for girls, almshouses, and other charities. The eleemosynary element —shown in the maintenance of almshouses, the giving of marriage-portions and apprentice-fees, etc.—used to be predominant in the distribution of the charity, but now the educational prevails. The only important manfacture of B. is that of iron goods, especially agricultural implements. Lace-making and straw-plaiting employ many poor women and children. A considerable traffic in malt, timber, coals, and iron is maintained with Lynn Regis, by means of the Ouse. B. is of great antiquity, and is mentioned in the Saxon Chronicle under the name of Bedcanford, as the scene of a battle between the Britons and Saxons in 571. The Danes burnt it, 1010. Its old castle, said to be built by Edward the Elder, is frequently mentioned in history. B. elects one M. P. (two before 1885). John Bunyan was born near B. He dreamed his immortal dream in B. jail, and ministered to the Baptist congregation in Mill Lane from 1671 to his death in 1688. The inhabitants still hold his memory in deep veneration, and some relics of him are preserved. A handsome building, Italian in style, for the Bunyan schools, was completed, 1867. A bronze statue of Bunyan was erected by the Duke of Bedford, 1874. Pop. abt. 30,000.

BEDFORD, John Plantagenet, Duke of, Regent of France: abt. 1389-1435, Sep. 19; third son of Henry IV. of England. During his father's lifetime, he was governor of Berwick-upon-Tweed, and warden of the Scottish marches. In 1414, the second year of his brother's reign, he was created Duke of B.; and he was made commander-in-chief of the forces in England while Henry V. was carrying on the war in France. After the death of Henry V. (1422), B., in accordance with the dying wish of the king, left the affairs of England in the hands of his brother Gloucester, and went to France to look after the interests of the infant prince, his nephew. The regency of France, in compliance with a request of his deceased brother, he offered to the Duke of Burgundy, who refused it; he then assumed it himself, but not without consulting Burgundy as to the best method of carrying out the treaty of Troyes, by which Charles VI. declared Henry V. next heir to the French crown. On the death of Charles VI., a few months after Henry V., B. had his nephew proclaimed king of France and England, as Henry VI. In the wars with the dauphin which followed, B. displayed great generalship, and defeated the French in several battles—most disastrously at Verneuil, 1424. But, in consequence of the parsimonious way in which men and money were doled out to him from England, and the withdrawal of the forces of the Duke of Burgundy, he was unable to take full advantage of his victories. The appearance of Joan of Arc, notwithstanding the utmost energy of B., was followed by disaster to the English arms; and in 1435, B. was mortified by the treaty of peace negotiated at Rouen between Charles VII. and the Duke of Burgundy, which effectually ruined English interests in France. His death was due mainly to his anxiety and vexation in view of this event. B., who was a patron of letters, purchased and removed to London the Royal Library of Paris, consisting of 900 vols. There have been two distinct dukedoms of B. For the present family of B., see Russell, House of.

BED'FORD LEVEL: extensive tract of flat land on the e. coast of England, embracing nearly all the marshy district called the Fens. It extends inland around the Wash into the six counties of Northampton, Huntingdon, Cambridge, Lincoln, Norfolk, and Suffolk, and has an area of abt. 450,000 acres. Its inland boundary forms a horseshoe of highlands, and reaches the towns of Brandon, Milton—3 m. n.n.e. of Cambridge—Earith, Peterborough, and Bolingbroke. It is divided into three parts—the n. level, between the rivers Welland and Nene; the middle, between the Nene and the Old Bedford river; and the s., extending to Stoke, Feltwell, and Mildenhall. It is intersected by many artificial channels, as well as by the lower parts of the rivers Nene, Cam, Ouse (Great and Little), Welland, Glen, Lark, and Stoke. It receives the waters of the whole or parts of nine counties. This district seems to have been a great forest at the time of the Ro-

mans, who cut the forest down; formed great embankments, to exclude the tide; and rendered the tract for a time a fertile inhabited region. The Emperor Severus, in the 3d c., made roads through it, one of which is now covered with two to five feet of water. In the 13th c., violent incursions of the sea stopped the outflow of the rivers, and it became a morass. The practicability of draining this extensive region seems to have been thought of as early as 1436, and many partial attempts were made. The first effectual effort was in 1634, when Francis, Earl of Bedford, after whom the district was thenceforth called, obtained, with 13 others, a charter to drain the level, on condition of receiving 95,000 acres of the reclaimed land. The work was partially accomplished in three years, at the expense of £100,000; but was pronounced by the government to be inadequate. Charles I. tried to get the work, with a greatly increased premium, into his own hands, but the civil war stopped further progress. In 1649, parliament confirmed William, Earl of Bedford, in the rights granted to his father; and after a fresh outlay of £300,000 the contract was fulfilled. In 1688, a corporation was formed for the management of the level. The middle level has always been the most difficult to manage. St. Germain's sluice, at the confluence of the great drain in this district with the Ouse, was considered perfectly secure. But in 1862, May, this sluice gave way under the pressure of a strong tide, and the w. bank of the middle level drain burst, speedily flooding about 6,000 acres of fertile land. This led to the construction of a permanent coffer-dam of pile-work, to shut off the tidal waters; and for the drainage of the middle level, Slater's-Lode sluice, the old outlet to the Ouse, was taken advantage of; and siphon pipes were laid over the coffer-dam, the flood-waters let off by them and by drains; the siphons acting as a permanent sluice.

BEDIGHT, v. *bĕ-dīt′:* to dress, especially in splendid raiment; to equip; to deck; to adorn. BEDIGHT′ED, a. (used chiefly in composition): set off. ILL-BEDIGHTED, disfigured. BEDIGHT′ING, imp.

BEDIM, v. *bĕ-dĭm′* [*be*, and *dim*]: to darken; to obscure. BEDIM′MING, imp. BEDIMMED, pp. *bĕ-dĭmd′*.

BEDIZEN, v. *bĕ-dĭz′n* [*be*, and OE. *dizen*, to clothe a distaff with flax: Gael. *deiseachd*, dress, elegance: F. *badigeoner*, to rough-cast in plaster]: to load with ornament; to dress with unbecoming richness. BEDIZENING, imp. *bĕ-dĭz′nĭng*. BEDIZENED, pp. *bĕ-dĭz′nd*.

BEDLAM, n. *bĕd′lăm* [contr. from the hospital of St. Mary of *Bethlehem* in St. George's Fields, London, used as a house for the insane]: a madhouse; a lunatic asylum; a place where there is a great deal of noise and uproar. BED′LAMITE, n. *-īt*, one confined in a madhouse. Bethlehem was originally founded in Bishopsgate Street Without, 1246, by Simon Fitz-Mary, one of the sheriffs of London, as 'a priory of canons with brethren and sisters.'

When the religious houses were suppressed by Henry VIII., the one in Bishopsgate Street fell into the possession of the corporation of London, who converted it into an asylum for 50 or 60 insane persons. In 1675, the hospital was taken down, and a new one, affording accommodation for about 150 patients, was erected in Moorfields, at a cost of about £17,000. In 1814, the hospital was again pulled down, and the patients transferred to a new hospital in St. George's Fields, erected for 198 patients; but in 1838 extended so as to accommodate 166 more. The building, with its grounds, now covers an area of 14 acres, and is lacking in nothing likely to insure the comfort or promote the recovery of patients. In former times, the management of B. was deplorable. The patients were exhibited to the public, like wild beasts in cages, at so much per head, and were treated and made sport of by visitors, as if they had been animals in a menagerie. The funds of the hospital not being sufficient to meet the expenditure, partially convalescent patients, with badges affixed to their arms, and known as Tom-o'-Bedlams, or 'Bedlam Beggars,' were turned out to wander and beg in the streets. Edgar, in Shakespeare's *Lear*, assumes the character of one of these. This practice, however, appears to have been stopped before 1675; an advertisement in the *London Gazette* of that date, from the governors of B., cautions the public against giving alms to vagrants representing themselves as from the hospital, no permission to beg being at that time given to patients. Now, the moral and physical management of the patients is so excellent, that annually more than one half of their number are returned as cured.

BEDLINGTON TERRIER *bed'lĭng-ton tĕr'rĭ-ėr:* dog so called from a village and parish of that name in Northumberland, one of the districts in which the race has been extensively bred. The chief points of a model Bedlington terrier are the following: Muzzle rather long and fine, but powerful; head, high and rather narrow, the hair on the top being more silky and of a lighter color than on the rest of the body; eyes, small, round, and rather sunk; ears, filbert-shaped, hanging close to the head, slightly feathered at the tips; neck, long, slender, but muscular; body, well proportioned, slender, and deep chested; toes, well arched; legs, straight and rather long; tail, tapering to a point, with no feather; coat, somewhat fine but not silky, short and rather thin; color, liver or sandy, with dark flesh-colored nose, or blue-black, with black nose; height, 13 to 15 inches. The Bedlington terrier is greatly valued on account of its unsurpassed courage, its speed, and its sagacity. It is determinedly hostile to all kinds of vermin, and will face even the otter, fox, or badger without flinching. It is also a capital water-dog. The n. of England is the district *par excellence* of the true Bedlington terrier, the dogs reared by breeders at or in the neighborhood of Newcastle usually receiving the awards of merit at dog-shows. The origin of the Bedlington terrier is not certainly known, but it seems proved that the breed existed

in Rothbury (also in Northumberland, to the n. of Bedlington) before it was known in the district whence it takes its name.

BEDMAR, *bĕd-mâr′*, ALFONSO DE CUEVA, Marquis de: 1572-1655: notable for his daring and unscrupulous plot for the destruction of Venice, to which city he had been appointed ambassador from the court of Spain, 1607. It was a difficult office to fill, for Venice and Spain cherished most unfriendly feelings towards each other. B. probably conceived that he was acting a patriotic and justifiable part, in taking advantage of his position to play the spy and conspirator; but whether or not, his scheme was contrived with admirable ingenuity. He first leagued himself secretly with the Duke of Ossuna, viceroy of Naples, and Don Pedro of Toledo, gov. of Milan, whom he made his confidants and coadjutors. He then purchased the services of a large number of foreign mercenaries, and scattered them through the city to prevent suspicion. Ossuna furnished him with a band of semi-pirates, who were to enter the Venetian fleet, corrupt the sailors, and hinder operations in any way they could. The conspirators were to set fire to the arsenal of the republic, and seize all the important posts. At this precise moment, the Milanese troops were to appear at the extremity of the mainland, and those sailors who had been seduced from their allegiance were to convey them rapidly over to Venice. A Spanish fleet was to creep up the Adriatic, in order to assist if necessary. The city was then to be plundered and destroyed. The day chosen was that on which the doge wedded the Adriatic, when all Venice was intent on beholding the august ceremony. Fortunately, the night before the crime was to have been perpetrated, one of the conspirators betrayed the whole. Several persons were executed; but strangely, B., the arch-delinquent, was only dismissed. This has excited the skepticism of many writers as to the truth of the accusation; but the evidence in favor of the historic reality of the plot is generally held incontestable. The event forms the subject of Otway's popular and pathetic play, *Venice Preserved.* B. then went to Flanders, where he became pres. of the council, and, 1622, was made a cardinal by the pope. He then went to Rome, and finally returned to Spain as Bishop of Oviedo, where he died. He is said to have been the author of a pamphlet published 1612, against the liberties of Venice, entitled *Squittino della Liberta Veneta.*

BEDNORE, *bĕd′nōr*, or NUGGUR, *nŭg′gŭr:* decayed city of Mysore, India: in the midst of a basin in a rugged tableland of the Western Ghauts, more than 4,000 ft. above the sea; n. latitude, 13° 50′, e. long. 75° 6′; 150 m. n. w. from Seringapatam. It was formerly the seat of govt. of a rajah, and its population exceeded 100,000. In 1763, it was taken by Hyder Ali, who pillaged it of property to the estimated value of $60,000,000 and subsequently

made it the seat of his own govt., calling it Hydernuggur (Hyder's Town), of which the name Nuggur is an abridgment. It was taken by the British under General Matthews, 1783, but soon retaken by Tippoo, at the head of a vastly superior force, when General Matthews and all the principal British officers were put to death. The neighboring country is mostly covered with dense and luxurious forests.

BED OF JUSTICE: literally, the seat or throne occupied by the French monarch when he was present at the deliberations of parliament. Historically, a B. of J. signified a solemn session, in which the king was present to overrule the decisions of parliament, and to enforce the acceptance of edicts or ordinances which it had previously rejected. The theory of the old French constitution was, that the authority of parliament was derived solely from the crown: consequently, when the king, the source of authority, was present, that which was delegated ceased. Acknowledging such a principle, the parliament was logically incapable of resisting any demand that the king in a B. of J. might make, and decrees promulgated during a sitting of this kind were held to be of more authority than ordinary decisions of parliament. Monarchs were not slow to take advantage of this power to overawe any parliament that exhibited signs of independence. The last B. of J. was held by Louis XVI. at Versailles, 1787, Sep.

BEDOS DE CELLES, *bėh-dōs dėh sĕl'*, Dom Jean François: abt. 1706-79: b. Chaux, France: Benedictine monk of the congregation of St. Maur, the most learned and practical master of the art of organ-building in the 18th c., whose work on the art is to the present day of great importance. He entered his order, 1726, at Toulouse, where he built several large and superior church organs. He was elected a member of the Acad. of Sciences, 1758; in 1770, he completed for the Acad. his great work, *L'Art du Facteur d'Orgues*, 4 vols., large folio, with 137 copperplates, beautifully executed. This work has never been translated into English, but the greater part of it has been translated into German. He also published *Gnomonique Pratique* (1774), an exposition of the principles involved in the drawing of sun-dials.

BEDOTT', Widow, the literary name of Mrs. Francis Miriam Whitcher, author of the once famous 'Widow Bedott Papers.'

BEDOUIN, n. *bĕd'ôû-ēn'* [F. *bédouin;* Ar. *bedawi*, living in the desert—from *badw*, a desert]: an Arab of one of the unsettled tribes of Arabia and northern Africa. The Bedouins are generally regarded, according to tradition, as descendants of Ishmael, and the aborigines of Arabia. The most ancient notices found in Scripture agree, in their descriptions of the manners and customs of the Bedouins, with the facts of the present time. As nomads, they have no united history, but only a collection of genealogies. They have but seldom appeared as a united

people, taking a prominent part in the world's politics, and have never been entirely held in subjection by any foreign power. The desert of Arabia, especially the plateau of Nedjid, is their central place of abode; but, even in ancient times, they had spread themselves over the deserts of Egypt and Syria; and in later times, after the decay of ancient civilization, they entered Syria, Mesopotamia, and Chaldæa. The conquest of n. Africa, in the 7th c., opened to them still vaster tracts, and they soon extended themselves over the Great Desert to the shores of the Atlantic Ocean. At present, they are to be found scattered over an immense breadth of territory—viz., from the w. boundary of Persia to the Atlantic, and from the mountains of Kurdistan to the negro countries of Sudan. In the cultivated lands of Mesopotamia, Chaldæa, the Syrian confines, Barbary, Nubia, and the n. of Sudan, the Arabs are found intermingled with other nations; but in the deserts they have maintained their distinct character and independence. The characteristics of the Bedouins, as herdsmen and robbers in the desert, are intimately connected with the nature of their habitation. Their abstinent, precarious, and often solitary mode of life makes them disposed to exercise mutual hospitality; but their independence, love of liberty, and other good qualities are associated with violent passions and love of plunder, which is utterly reckless of the rights of property. They are generally well-made men, lean, sinewy, and active; but, on account of frequent hardships and privations, are commonly below middle stature. Their senses, especially sight, are keen, and their carriage is free and independent. The nose is commonly aquiline, the face rather lengthened, and the eyes are well shaped and expressive of both daring and cunning. In complexion, they have various shades of brown. With the exception of certain tribes in Syria, all the Bedouins are professedly Mohammedans, but not strict in the observance of their religious rites and duties. Their *Marabuts* (q. v.)—a class of ascetics—take the place of priests, and exercise considerable influence in all social and public affairs. As the Arabs have no settled government or policy, religious traditions and customs form the only bond of order and union among them. Though their intellectual powers are naturally good, they are miserably destitute of solid knowledge. Their endless tales and poetical effusions show a wonderful activity of imagination and an oriental love of hyperbole. The relation of the sexes to each other is less constrained than among the settled peoples of the East, and a substitute for polygamy is found in a frequent interchange of wives. Their favorite pastimes are the chase, ball-play, dancing, songs, stories, and the *dolce far niente* (pleasant laziness) of drinking coffee and smoking narghiles. Their diet is principally derived from their herds, but includes a few vegetables, and even locusts and lizards. Honey is a principal luxury with all classes, and, moreover, one which has a religious sanction, for it was indulged in by Mohammed himself, who makes copious mention of

it in the Koran. They manufacture their own woolen clothing, which consists of the *haikh*—a long, wide garment fastened on the head, and descending to the feet—and the *burnoose*, a large mantle. The political condition of the Bedouins may be styled patriarchal. One or more families, the males of which bear the title of *sheik*, form the core of a tribe, and with the marabouts, or priests, constitute a kind of aristocracy. Out of their number, the superior *sheik*, or kaid, is elected, who rules in patriarchal style over the whole tribe.

BEDRAGGLE, v. *bĕ-drăg'gl* [*be*, and *draggle*]: to soil the clothes by suffering them in walking to reach the dirt. BEDRAG'GLING, imp. BEDRAG'GLED, pp. *-gld.*

BEDSORE: in case of serious illness in which the vital powers are greatly depressed, as in typhoid fever, unless care is exercised ulcer may form on the back or over the hip bones, occasionally even on the elbows as a result of pressure in lying upon these parts. Similar ones may also be found in case of paralysis and certain diseases of the spinal cord. In the latter case the trouble may not be due so much to pressure as to an abnormal state of the nerves governing the nutrition of the skin as the 'trophia' nerves; when so occurring are called trophic ulcers. It is often impossible to prevent the formation of bedsores of this nature, but the ulcers from pressure may be avoided by scrupulous cleanliness, the parts exposed to pressure from the weight of the patient on the bed being kept dry, and being sponged occasionally with alcohol and water. Care should be taken too that the mattress is soft and that there are no creases in the sheet upon which the patient lies. A ring of cotton wool may be so placed as to remove pressure from the bony parts or an air cushion may be used for the same purpose. In some cases of prolonged illness or of paralysis a water bed or air mattress may be necessary.

BEDSTRAW (*Galium*): a genus of plants belonging to the nat. ord. *Rubiaceæ* (q. v.), and distinguished by a small wheel-shaped calyx, and a dry two-lobed fruit, each lobe containing a single seed. The leaves, as in the rest of the order, are whorled, and the flowers minute; but in many of the species the panicles are so large and many-flowered that they are ornamental. The species are very numerous, natives chiefly of the colder parts of the n. hemisphere, or of mountainous regions within or near the tropics. Among the species is the YELLOW B. (*G. verum*)—sometimes called CHEESE RENNET, because it has the property of curdling milk, and is used for that purpose—a small plant with linear deflexed leaves and dense panicles of bright yellow flowers, very abundant on dry banks. The flowering tops boiled in alum afford a dye of a bright yellow color, much used in Iceland; and the Highlanders of Scotland have long been accustomed to employ the roots, and especially the bark of them, for dyeing yarn red. They are said to yield a red color fully equal to that of madder, and the

cultivation of the plant has been attempted in England. The roots of other species of the same genus possess similar properties, as those of *G. trifidum*, variety *tinctorium*.

BEE, n. *bē* [AS. *beo*; Ger. *biene*; Gael. *beach*; Icel. *by*; Sks. *bha*, a bee]: an insect that makes honey and wax. BEEHIVE, n. *bē'hīv*, a case or box in which domestic bees build their honeycombs and store their honey. BEE-BIRD, a local English name for the spotted Flycatcher, *Muscicapa grisola*. BEE-BLOCK, one of the blocks of hard wood bolted to the sides of the bowsprit-head, for reeving the foretopmast stays through. BEE-FEEDER, a device for feeding bees in bad weather or protracted winters. It is a small perforated piece of board which floats on the liquid food. BEE-FLOWER, a kind of orchis whose flowers represent singular figures of bees and flies. BEE-FUMIGATOR, a blower for driving smoke into a hive to expel the bees while the honey is being taken away. BEE-GARDEN, an inclosure where bees are reared. BEE-GLUE, propolis, the glue-like or gummy substance with which bees affix their combs to the hive and close their cells. BEE-HAWK, the honey-buzzard. BEE HAWK-MOTH, the name given to some species of the family *Sphingidæ*. BEE-LARKSPUR, a flowering plant, *Delphinum grandiflorum*. BEE-MOTH, the wax-moth, *Galleria cereana*, which lays its eggs in beehives, the larvæ, when hatched, feeding on the wax. BEE-PARASITES, n. the order of insects called *Strepsiptera*, which are parasitic on bees and wasps. BEE LINE, in *Amer.*, the most direct line from one place to another. BEE MASTER, one who keeps and rears bees. BEE'S-WAX, *bēz-wăks*, the wax collected by bees. BEE'S-WING, a crust in port wine. BEE-BREAD, the pollen or dust of flowers collected by bees. BEE-EATER, a bird that feeds on bees. BEE IN ONE'S BONNET, unsettled in manners and disposition; flighty.

BEE: common name of a very large family of insects, of the ord. *Hymenoptera* (q. v.) belonging to the section of that order called *Aculeata*, in which the females are furnished not with an ovipositor, but (usually) with a sting. All bees were included by Linnæus in the genus *Apis* (Lat. for B.), but are now divided into many genera; and the name *Anthophila* (Gr. flower-loving) or *Mellifera* (Lat. honey-bearing) is given to the family which they constitute. All bees in a perfect state feed exclusively or chiefly on saccharine juices, particularly the nectar or honey of flowers; and the ordinary food of their young, in the larva state, is the pollen of flowers, or a paste, often called bee-bread, composed of pollen and honey. They evidently perform a very important part in the economy of nature, in the fertilization of flowers, which depends upon the contact of particles of the pollen with the stigma; and, as if to secure this object more perfectly, in their search for honey and pollen, they usually pass from flower to flower of the same kind, and not to flowers of different kinds indis-

criminately. They abound in almost all parts of the world, but particularly in the warmer parts of it. Not fewer than 250 species are known as natives of Britain.

To enable them to reach their liquid food at the bottom of the tubes of flowers, and in the little receptacles in which it is produced, bees have certain parts of the mouth —the *maxillæ* and *labium* (see INSECTS), or lower jaws and lower lip, with their feelers (*palpi*)—elongated into a sort of proboscis; and the *ligula* is elongated, sometimes, as in the common Hive B., assuming the form of a filament, is capable of extension and retraction, and is folded up when not in use. This is the organ sometimes called the tongue of bees, although the name cannot be regarded as very appropriate, it being a part of the labium or lower lip. The other elongated parts of the mouth serve as a sort of sheath for this organ when folded up. It is not tubular, and employed in the manner of suction, as was at one time supposed, but is generally more or less hairy, so that the honey adheres to it as it is rolled and moved about, and is conveyed up through the mouth into the honey-bag, sometimes called the first stomach, an appropriate receptacle, in which it apparently undergoes some change—without, however, being subjected to any process analogous to digestion, and is ready to be given forth again by the mouth, according to the habits of those species of bees which are social, as food for the members of the community that remain at home in the nest, or to be stored up in cells for future provision. See HONEY. But the mouth of bees is also adapted for cutting and tearing, and to this purpose their mandibles or upper jaws are especially appropriated. Of these, some of them, as the common Humble B. (q.v.), make use to open their way into the tubes of flowers which are so deep and narrow that they cannot otherwise reach the nectar at the bottom. Others make use of their mandibles to cut out portions of leaves, or of the petals of flowers, to form or line their nests; the common Hive B. uses them in working with wax, in feeding larvæ with pollen, in cleaning out cells, in tearing to pieces old combs, in combats, and in all the great variety of purposes for which organs of prehension are required. But it is not by means of any of the organs connected with the mouth that bees collect and carry to their nests the supplies of pollen needful for their young. The feathered hairs with which their bodies are partially clothed, and particularly those with which their legs are furnished, serve for the purpose of collecting the pollen, which adheres to them, and it is brushed into a hollow on the outer surface of the first joint of the tarsus of each of the hinder pair of legs, this joint being therefore very large, compressed, and of a square or triangular form—a conformation to which nothing similar is found in any other family of insects. It is also worthy of observation, that in the social species of bees, the males and the queens, which are never to be employed in collecting pollen, do not exhibit this conformation adapted to it, but only the

sexually imperfect females, commonly called neuters or workers.

Bees, like other hymenopterous insects, are extremely well provided with organs of sight, and evidently possess that sense in very great perfection. In the front of the head, they have two large eyes, the surface of each consisting of 6,000 or 7,000 hexagonal plates, which may be likened to the object-glasses of so many telescopes; and the faculty which these insects certainly possess, of returning in a direct line to their hive or nest, from the utmost distance of their wanderings, has been with the greatest probability ascribed to their power of sight. But besides these large eyes, they have, like the rest of the hymenopterous order,

Bee Sting, highly magnified.

A, sting of bee; S, sheath of sting; F, end of sting, greatly magnified, showing six barbs curved upwards; B, glands for secreting poison; C, ducts through which it flows to D, where it is kept ready for use; O, circular dilation to prevent sting being thrust too far out of sheath.

three small eyes on the very top of the head, which are supposed to be intended to give a defensive vision upwards from the cups of flowers.—They are evidently, however, possessed of organs which enable them to guide their movements in the dark as accurately as in the full light of day, at least within the nest or hive; and this power is generally ascribed to the *antennæ* (q.v.), which are sometimes supposed to be not merely delicate organs of touch, but also organs of hearing, or of some special sense unknown to us. It is certain that the social bees have some means of communicating with each other by means of their antennæ; and that they avail themselves of these organs both for their ordinary operations, for recognition of each other, and for what may be called the con-

duct of the affairs of the hive. There can be no doubt that bees possess in a very high degree the sense of smell; and their possession of the senses of taste and hearing is almost equally unquestionable, whatever difficulty there may be in determining the particular organs of the latter sense.—The wings of bees, like those of other hymenopterous insects, are four in number; thin and membranaceous; the hinder pair always smaller than the others; and, in flight, attached to them by a number of small hooks, so that the four wings move as if they were two.

The sting of bees is a very remarkable organ. It consists of two long darts, with a protecting sheath. A venom bag is connected with it, and powerful muscles for its propulsion. The wound appears to be first made by the sheath, along which the poison passes by a groove; and the darts thrust out afterwards in succession, deepen the wound. The darts are each furnished with a number of barbs, which render it so difficult to withdraw them quickly, that bees often lose their lives by the injury which they sustain in the effort.—The males are destitute of stings.

The great family of bees is divided into two principal sections called *Andrenetæ* and *Apiariæ*, or *Andrenidæ* and *Apidæ;* the latter names, however, being sometimes employed in senses more restricted. In the first of these sections, the *ligula* is comparatively short and broad; in the second, it is lengthened, and has the form of a filament. All the *Andrenetæ* live solitarily, as well as several subdivisions of the *Apiariæ*. These solitary bees do not lay up stores for their own winter subsistence; but they display very wonderful and various instincts in the habitations which they construct and the provision which they make for their young. There are among them males and perfect females only, and no neuters. The work of preparing nests and providing food for the young seems, in all of the species, to be performed exclusively by the females. *Colletes succincta*, a common British species of the *Andrenetæ*, affords an example of a mode of nest-making, which, with various modifications, is common to many species of that section. The parent B. excavates a cylindrical hole in the earth, usually horizontal, to the depth of about two inches, in a dry bank or a wall of stones and earth. The sides of this hole are compacted by means of a sort of gelatinous liquid, secreted by the insect, and it is occupied with cells, formed of a transparent and delicate membrane, the substance of which is the same secretion in a dried state. The cells are thimble-shaped, fitting into each other, a little space being left at the furthest end of each for the reception of an egg and a little paste of pollen and honey. The last cell being completed, and its proper contents deposited in it, the mouth of the whole is carefully stopped up with earth.—Some of the solitary bees, possessing great strength of mandibles, excavate their nests in old wood. *Xylocopa violacea*, one of the *Apiariæ*, common in parts of Europe, makes a tunnel not less than

twelve or fifteen inches long, and half an inch wide, which is divided into ten or twelve cells; an egg with store of pollen and honey is deposited in each compartment, and as the lowest egg is hatched first, a second orifice is provided at that part of the tunnel, through which each of the young ones in succession comes forth to the light of day, each larva, as it is about to change into the pupa state, placing itself with its head downwards in the cell.—Numerous species of solitary bees excavate their tunnel-shaped nests in the soft pith of decayed briers or brambles, of the particles of which they also form their cells.—Some species of *Megachile*, *Osmia*, etc., line them and divide them into cells with portions of leaves or of the petals of flowers. See LEAF-CUTTER BEE. Some of the solitary bees make their nests, not in the earth, but in cavities of decaying trees, or other such situations, where they construct their cells without the same necessity of excavation; but some of them, by a very admirable instinct, surround their nest with down collected from the leaves of plants, an excellent non-conductor of heat, so that a nearly uniform temperature is maintained in situations in which the changes would otherwise be great and rapid. Some bees make their little nests in old oak-galls, and there are species which appropriate empty snail-shells to that use.—Some species of the genus *Megachile* build their nests of a sort of mason-work of grains of sand glued together with their viscid saliva. The nest of *M. muraria*, thus constructed, is so hard as not to be easily penetrated by a knife, and very much resembles a splash of mud upon a wall.

The social bees live in communities like those of ants, which also, like theirs, consist of males, females, and neuters—these last being females with ovaries imperfectly developed, and characterized by peculiarities of form and structure, as well as of instinct and employments, remarkably different from those of the perfect females. The social bees are conveniently divided into Humble Bees (q.v.) and Honey Bees, of the latter of which the common Hive B. may be regarded as the type. The species of Honey B. (the restricted genus *Apis*) are not few, and they are natives of the warm parts of the old world; the Hive bees (*Apis mellifica*) which now abound in some parts of America, and which have become naturalized in the forests to a considerable distance beyond the abodes of civilized men, being the progeny of those which were conveyed from Europe. The Hive B. is said not to have been found to the w. of the Mississippi before 1797, but in fourteen years it had advanced 600 m. further in that direction. The different species of Honey B. in a wild state generally make their nests in hollow trees, or among the branches of trees, sometimes under ledges or in clefts of rocks; and their stores of honey are not only sought after by man, but afford food to numerous animals, some of which equally delight to prey upon their larvæ. The B. was among

the ancient Egyptians the hieroglyphical emblem of royalty. The B. domesticated or cultivated in Egypt is not, however, our common Hive B., but another species called *Apis fasciata*; and in Italy and Greece, and more recently in America, the 'Italian' bee, *A. Ligustica*, is employed, which has a long proboscis, and can work red clover, which the Hive B. cannot do. These species differ little from the common Hive B., and their honey is very similar; but that of some species is considerably different. *A. unicolor*, of Madagascar and the Isle of France, yields an esteemed honey of a green color. It is domesticated, or is the object of human care and attention there as are also *A. Indica* in some parts of India, and *A. Adansonii* in Senegal. The genus *Melipona* is nearly allied to *Apis*. The species are natives of S. America, and their honey is extremely sweet and agreeable, but very liquid, and apt to ferment. They make their nests in the cavities or on the tops of trees.

The Hive Bee.—Natural History.—The instincts and social economy of the HIVE B. (*Apis mellifica*) have been studied with great attention both in ancient and in modern times, and discoveries—than which, perhaps, nature presents nothing more interesting and wonderful—have rewarded the patient observations of Huber and other students of this subject. *Apiarian societies* have been formed for the purpose of prosecuting this single branch of natural history, and of promoting successful apiculture, or the economical keeping of bees.

The Hive B. may have been brought to Europe from the East. Its communities seem ordinarily to number from 80,000 to 90,000 individuals, and there appears no reason to think that the care bestowed upon the insect by man, or the *hives* which he has provided for it, have made any important difference in this respect. One member of each community is a perfect female—the queen or mother B.; from 600 to 2,000 at certain seasons are males; and the remainder are *neuters* or workers.

The workers have a body about half an inch in length, and about one-sixth of an inch in greatest breadth, at the upper part of the abdomen. The antennæ are twelve-jointed, and terminate in a knob. The abdomen consists of six joints or rings, and under the scaly coverings of the four middle ones are situated the *wax-pockets* or organs for the secretion of wax. The extremity of the abdomen is provided with a sting, which is straight. The basal joint of each hind tarsus is dilated to form a pollen-basket, and the legs are well provided with hairs for collecting the pollen and brushing it into this receptacle.—The males or *drones*, so called from the peculiar noise which they make in their flight, are much larger than the neuters, and thicker in proportion. The antennæ have an additional joint. The eyes are remarkably large, and meet upon the crown.—The perfect females are considerably longer than either the workers or males; they are also distinguished by the yellow tint of the under part of the body, and very

remarkably differ from all the other inmates of the hive in the shortness of their wings, which, instead of reaching to the extremity of the abdomen, leave some of its rings uncovered.—Neither males nor queens have wax-pockets, nor have they pollen-baskets. Their legs also are less hairy. The sting of the queen B. is curved. The mandibles both of the males and perfect females are notched or toothed beneath the tip, while those of the workers are not.—It will be seen from this brief description that the sexes differ so widely as to appear, if the contrary were not well known, insects of different species; but still more remarkable is the difference between the females and the workers when we consider that it is all to be ascribed to the different forms of the cells in which the eggs are hatched and the young bees reared, and to the different kinds of food with which they are supplied. All doubt upon this point is removed by the interesting discovery of Schirach, that when a hive is deprived of its queen, the

Bees.
A, queen; B, drone; C, worker.

bees provide themselves with another. "The workers," says Burroughs, "take the larva of an ordinary bee, enlarge the cell by taking in the two adjoining ones, and nurse it and stuff it and coddle it, till at the end of sixteen days it comes out a queen." These are facts well ascertained, but of which science has yet been unable to give any explanation.

The greater part of the life of the queen or mother bee is spent in laying eggs for the increase of the population of the hive; and this increase goes on at a rapid rate, for the queen frequently lays two or three thousand eggs a day, as she passes, in a methodical spiral, from cell to cell, omitting none, and never pausing to rest. The number, however, varies greatly. In cold weather it is very small, but the invariable presence of brood in different stages, in a well-stocked hive, proves that some eggs are laid even in winter. During the later spring months the number is very great; many practical apiarians considering that as many as 1,000, or even 2,000, are deposited daily. The community, however, is not destined to an

indefinite increase; but in certain circumstances *swarming* takes place, and new colonies are founded.

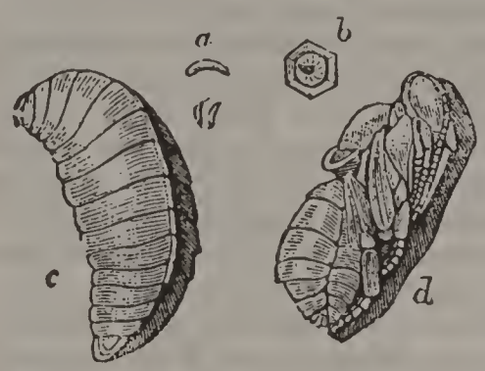
The impregnation of the queen takes place in the air, and usually within a few days after she herself has emerged from the cell. It is the only occasion of her ever leaving the hive, except that of swarming, and there is no repetition of it during her whole life. The question has therefore been asked, why there are so many males in a B. community; but no very satisfactory answer has been given to it. The males are not known to fulfil any other purpose than that of the propagation of their species; and after the swarming season is over, the greater part of them are ruthlessly massacred by the workers, as if in dread of their consuming too much of the common store. The greater part of the workers themselves are supposed scarcely to live for a year; the duration of the life of queen bees is often more than three years.

The queen B., when about to begin to lay eggs, is the object of great attention on the part of the workers, and so continues. She moves about in the hive, attended by a sort of retinue of about ten or fifteen workers, by some of which she is frequently supplied with honey. But the name of queen B. appears to have originated in a mistaken notion that something analogous to a monarchy subsists in the bee-hive; and imagination being permitted very free scope, many things have been invested with a false coloring derived from this analogy. The queen or mother B. appears to be the object of particular regard, as indispensable to the objects for which the B. community subsists, and to which the instincts of all its members are variously directed. She moves about, depositing her eggs in the cells which the workers have prepared, and they are ready to take charge of each egg from the moment that it is deposited. Her employment requires that she should be fed with food collected by others, and many of the workers are in like manner supplied with food while busy within the hive, as well as the larvæ in the cells. 'There is but one fact or incident in the life of the queen,' says Burroughs, 'that looks imperial and authoritative: Huber relates that when the old queen is restrained in her movements by the workers, and prevented from destroying the young queens in their cells, she assumes a peculiar attitude and utters a note that strikes every bee motionless, and makes every head bow.'

The queen B. at first lays eggs which give birth to workers, and afterwards there takes place a laying of eggs which become drones. With unerring instinct, she places each egg in the kind of cell appropriate to it; while also, at the proper time, cells of the proper kind are prepared beforehand by the workers, the drones' cells being larger than the workers' cells. The cells in which future queens are to be reared are very unlike all the others, but the eggs differ in no respect from those deposited in workers' cells.

The eggs of bees are of a long shape and bluish-white color, about one-twelfth of an inch in length. They are

hatched in about three days. The larvæ are little worm-like creatures, having no feet, and lying coiled up like a ring; they are diligently fed by the working bees, until, in about five days, when large enough nearly to fill the cell, they refuse food, upon which the attendant bees seal up the cell with wax, and the larva, spinning itself a fine silken envelope or cocoon, is transformed into a pupa; and about the eighteenth day—or, in the case of drones, the twenty-fourth day—from the deposition of the egg, the young B., in its perfect state, breaks the covering, and issues from the cell. It is caressed and supplied with food by the attendant bees, and is believed not to try its wings until the following day. The cell from which a young B. has issued is speedily cleaned out, and prepared for the reception of another egg or of honey. The fine silken envelope of the pupa, however, remains attached to the cell, of which the capacity thus becomes gradually smaller, until the cells of old combs are too small to receive eggs, and can be used for honey alone, a fact of which the importance in relation to the economical management of bees is obvious.—The spinneret, by means of which the larva spins the cocoon, is a small organ connected with the mouth.—The food with which the larvæ are supplied is a mixture of pollen, honey, and water, with the addition, possibly, of some secretion from the stomachs of the working bees, in which it is prepared. It varies a little, according to the age and kind of the larva, and the peculiarities of that given to young queens appear to be indispensable to their fitness for their future functions. Pollen is constantly found stored up in the cells of the hive, and is often called bee-bread. Most people have found such cells in honeycomb, and have observed the bitter and peculiar taste of the contents.

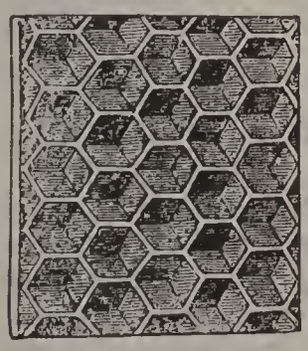


Egg, Larva, and Pupa of Hive Bee. *a*, egg, and very young larva; *b*, young larva coiled up at the bottom of the cell; *c*, larva when ready to undergo metamorphosis; *d*, pupa.

The combs of a bee-hive are parallel to each other, forming vertical strata of about an inch in thickness, and distant about half an inch from each other. The cells are therefore nearly horizontal, having a slight and somewhat variable dip towards the centre of each comb. The central comb is generally first begun, and next after it those next to it on each side. Circumstances frequently cause some departure from this uniform and symmetrical plan, which, however, still remains obvious. Each comb consists of two sets of cells, one on each side, and it may be mentioned as an illustration of the wonderful industry of bees, and the results of their combined labors, that a piece of comb, 14 inches long by 7 inches wide, and containing about 4,000 cells, has often been known to be constructed

in 24 hours. The greater part of the comb usually consists of the kind of cells fitted for breeding workers, a smaller part of it of the larger or drone cells. After the principal breeding-season is over, the cells of some parts of the comb are often elongated for the reception of honey; and sometimes comb of greater thickness, or with unusually long cells, is constructed for that purpose alone, in which case the mouths of the cells are inclined upwards, more than is usual with the ordinary brood cells. When a cell has been completely filled with honey its mouth is *sealed* or covered with wax.

It is impossible to look at a piece of comb taken from a bee-hive, without admiring, not only its beauty, but the perfect regularity of the size, form, and arrangement of the cells; and the more carefully it is examined, the more must it be admired. For in it are practically solved, by an instinct which can only be referred to the infinite wisdom of the Creator, some problems difficult to human science, particularly in the combination of the greatest economy of materials and of space with the most perfect convenience and the greatest strength. It appears even at a glance, that the cells are hexagonal or six-sided, the hexagons perfectly regular, and in this way there are no interstices between the cells. Now, the mathematician knows that there are only three regular figures, that is figures of which all the sides and angles are equal, bounded by straight lines, with which a space can be perfectly filled up in this way—the equilateral triangle, the square, and the hexagon; and of these the hexagon is at once the most suitable for the larva of the B. in its form, and the strongest in its nearest approach to the circle. The circular form itself would have left large interstices. But this is not all: the same wisdom which has given the solitary bees, already noticed, their instinct to surround their nest with a cottony substance, which serves as a non-conductor of heat, has directed the hive B. to the constant adoption of a mode of constructing its combs, which adds greatly to the strength that they would have possessed with the same amount of materials, if the cells had been merely regular hexagonal prisms, and the partition in the middle of the comb, between the cells of the one side of it and those of the other, therefore a simple plane. It is so far from being so, that when carefully examined it appears, if the expression may be used, the most ingenious part of the whole structure. It is composed of a multitude of little rhombs, or four-sided figures, with equal and parallel sides, and two obtuse and two acute angles, the obtuse angles being invariably angles of 109° 28′, and the acute angles of 70° 32′, agreeing precisely with the results of mathematical analysis, applied to the difficult question of the form of



Pyramidal bottoms of Cells.

the facets of a three-sided pyramid, which should terminate a six-sided prism, so as to combine the greatest economy of materials with the greatest strength. On looking at a piece of empty honeycomb, placed between the eye and the light, we readily perceive that the cells are not opposite to each other, cell to cell; but that the point of meeting of three sides of three cells, on one side, is opposite to the centre of a cell on the other side—a circumstance which of itself we cannot but regard as calculated greatly to increase the strength of the whole fabric. It follows also from this, that the terminating pyramids of the cells on the one side do not interfere with the form of the cells on the other side, but the three rhombic facets, which terminate each cell, belong likewise to three distinct cells on the opposite side of the comb.

The only departure from perfect regularity in the form of the cells is in the transition from the smaller or workers' cells to the larger or drones' cells.

The material of which the cells are built is chiefly wax (q.v.) produced by the bees, which, at first white, becomes brownish-yellow with age, and in very old combs almost black. Although wax exists as a vegetable product, yet bees-wax is now known to be produced by a chemistry carried on in the bodies of bees; and it has been found that they produce wax and build combs when supplied only with honey or saccharine substances. The *wax-pockets* in the abdomen of working-bees have been already referred to. The bees which are about to proceed to wax-making suspend themselves in clusters in the hive, attaching themselves to each other by means of hooks with which their feet are provided; and while they remain motionless in this position, the wax appears to be formed, in minute scales secreted between the rings of the abdomen, which they afterwards take in their mouths and curiously work up with a secretion from the mouth itself, passing the wax, in the form of a minute riband, through the mouth, first in one direction and then in the opposite one, and finally depositing it in its proper place for the foundation of the comb. One B. always begins the comb alone; the rest, in gradually increasing numbers, proceed in accordance with what has been already done. The bees which elaborate and deposit the wax do not, however, construct the cells, which is done by others, partly at least by a process of excavation in the wax deposited. It is supposed by many naturalists that some of the working-bees are exclusively wax-workers, some nurses, etc.; but others think that there is only one class of working-bees, all ready for any kind of work according to circumstances.

But wax, although the chief, is not the only material of the combs. *Propolis* (q.v.) is also employed in small bands to give greater strength to the cells, the mouths of which are surrounded with it, and made thicker than their walls. This substance, obtained by bees from the viscid buds of trees, is employed also for more firmly attaching the combs

to the hive, for closing up apertures in the hive, for covering up obnoxious substances, intruding slugs, etc., which are too large to be removed, and for a variety of similar purposes.

It has been already stated that queen-bees are hatched and reared in cells different from the rest. They are, indeed, very different, being vertical and not horizontal in their position—not hexagonal, but rather oval in form—and much larger than the other cells, even in proportion to the size of the animal that is to inhabit them: they are generally placed on the edge of a comb, and when they have served their purpose, are partially removed, so that during winter they resemble acorn-cups in appearance.

Two queens cannot exist in the community together. There is implanted in them the most deadly rivalry; and the mother-bee, if permitted, would even tear open every queen cell of which the inmate has nearly approached maturity, and inflict death by her sting. One of those wonderful instincts, however, with which bees are endowed, counteracts this at those times when, upon account of the increased numbers of the community, and in order to the formation of new colonies, it is requisite that it should be counteracted. The workers throng around the queen, hem her in, and prevent the execution of her purpose. The cell of the young queen also is carefully guarded, and she is not permitted to leave it. At such times peculiar sounds, produced probably by the action of the wings, are emitted both by the actual queen under restraint in her movements, and by the young one in the cell, which may be heard by an ear applied to the outside of the hive, and are familiar to B. cultivators as one of the surest signs of swarming. The queen now becomes restless; her agitation communicates itself to those around her, and extends through the hive; the ordinary work of the community is in great part neglected; fewer bees than usual are seen to leave or return to the hive; and at last the queen-bee rushes forth, preceded and followed by crowds which press and throng upon each other, form a buzzing cloud in the air, and very generally settle upon a bush in the neighborhood, where they soon congregate closely together, hanging by their claws in a dense cluster. Sometimes they rise up in the air, and fly off at once to a considerable distance, apparently to some previously selected place in the thick top of a tree—in the chimney or roof of a house, where they happen to find an aperture—or in some such situation. More frequently, they settle not far from the hive which they have left, often on some very humble plant, or even on the grass, and soon rise again. It is the care of the cultivator to prevent this by providing them immediately with a suitable habitation in a new hive, invitingly placed above them, or into which he puts the swarm after they have congregated closely together as above described. It sometimes happens that bees hurry out of their hive without their queen, in which case they do not in general congregate so closely together where they settle, and soon return to the hive again. Swarming generally takes place in a fine day; and when the bees seem on

the very point of *coming off*, a cloud passing over the sun is enough to retard it. Bad weather occasionally not only retards but prevents it, the young queens being at last killed in their cells.—When the first swarm of the season has left the hive with the old queen, as is usually, if not always, the case, the imprisoned young queen is set at liberty; and if the B. community is a large and prosperous one, other young queens also come forth from their cells, and leave the hive with successive swarms, the number of which depends upon the climate, the season, etc. It is not uncommon for a bee-hive to send off three swarms in a summer, the first being almost always the largest, and not unfrequently itself sending off a swarm before the season is over.

Bees left without a queen, and with no means of supplying the want, appear to feel themselves cut off from the very purpose of their existence; the labors of the community are relinquished, and its members are dispersed and die. It has already, however, been stated, that bees left without a queen can provide themselves with one, by transforming and enlarging a worker's cell which contains an egg or very young larva. This process is sometimes carried on as if by several distinct parties, in different parts of the hive at once; and as if aware that time will be gained, the bees generally prefer cells containing larvæ of two or three days old to those containing eggs.

Bees become partially torpid during cold weather, consuming much less food than they would otherwise require. They are readily aroused from this state, however, as may at any time be proved by tapping on a bee-hive, when it will be found that the temperature of the interior of the hive rises rapidly. Respiration is considerably lessened in the state of partial torpidity, and the temperature rises when it is resumed. The respiration of bees takes place by air-tubes or *tracheæ* (see INSECTS), and is very active when the insect is in a state of activity. The respiratory movements are easily seen in looking at a bee. The consumption of oxygen by this process might be expected soon to reduce the atmosphere within a hive to a state in which it could no longer support animal life; but in summer, when respiration is active and the hive populous, a constant circulation of air is maintained by the insects themselves, some of which are employed in a rapid vibration of their wings for this purpose. A greater or smaller number of them, according to circumstances, may frequently be seen thus engaged in fanning the air at the mouth of a bee-hive.

It is extraordinary that among the enemies of bees are certain species of moths, which, notwithstanding the danger of the stings of the bees, enter the hives and deposit their eggs. After the eggs are hatched, the larvæ feed upon the combs. Mice sometimes eat their way into the hives in winter, and destroy and plunder unmolested.

Bees are sometimes very destructive to each other in their combats, as when one B. community is assailed by others for the purpose of plunder. To this the weaker communities are liable, particularly when flowers are few, and bees are awakened to full activity in the warm days of early

spring. The narrower the entrances of bee-hives are at this season, at least of the less populous hives, the less likely is the B. owner to suffer loss from this cause, as the narrow entrance is more easily defended even against very numerous invaders.

Management of Bees.—Unless the natural surroundings are unusually favorable, the apiary (see APIARY) should be protected from the n. and w. winds by a tight board fence. It is desirable also that the yard should be inclosed, to prevent disturbance of the bees by stray animals or other intruders. But the hives should not be placed in contact with a fence, as this would interfere with the work of properly caring for the bees, and expose them to the attacks of various enemies. Each hive should be on a platform 4 or 5 inches from the ground; and, in order to gain the benefit of the morning sun, the openings should be toward the east. To prevent the growth of weeds and grass, the ground should be well covered with sand; and a board should lead to the entrance, so that heavily laden or exhausted bees alighting on the sand may be able to reach the hive. Hives should be 3 to 8 ft. apart, and a screen of vines or shrubs on the s. is desirable, to modify the extreme heat of summer. A constant supply of pure water should be provided; and bits of shingles or boards should be placed as floats, to keep the bees from drowning. Though bees can fly several miles, the expenditure of time and effort required to cover long distances should be avoided, by furnishing in the immediate vicinity sources from which honey may be obtained. The ancient Persians, Greeks, and Romans moved their bees from one spot to another, in search of better pastures; and, to some extent, the practice is followed in the present day. In Egypt, large numbers of bees are kept on boats, which move along the Nile, to take advantage of the flowering season at different points; and there are owners of large flat-boats who take a stock of bees and ascend the Mississippi river as the buckwheat-fields come into blossom, and the wild flowers of the south are succeeded by those of the cooler region. In Scotland, France, and Italy, bee-keepers sometimes move their stocks from one point to another, for fresher pastures. A far better course is to grow honey-producing plants and trees on the farms where the apiaries are located. Among the best plants for this purpose are the white, and sweet clovers, alfalfa, mignonette, rose, catnip, and sunflower. The maple, locust, and linden, among ornamental trees, and the various fruit-trees, vines, and bushes, are prolific sources of honey. The red clover yields excellent honey, but, on account of the length of its blossoms, cannot be utilized by the common bee; though it is said to be available to the Italian variety. Buckwheat is largely grown by bee-keepers, and, if different sowings are made, will furnish pasturage from the middle of July till the autumn frosts. The flavor and color of honey vary with the nature of the plants from

which it is made. That from buckwheat is of darker shade, though by many considered fully equal in quality to that from white clover. In order to prevent admixture of the different kinds, it is customary to remove the surplus frames or boxes of honey before the buckwheat season opens. In addition to the ordinary domestic black or German bee—native of the old world, but now common in nearly all parts of this country—the principal varieties kept in the United States are the Italian, Cyprian, and Syrian. The Italian, probably the most desirable, was introduced into this country about 1861. It works more hours a day than the common bee; has a longer proboscis, which enables it to obtain honey from flowers useless to some varieties; and, though easily handled by the owner, defends itself vigorously from its enemies. The pure Italian is easily distinguished from the common bee by 3 yellow bands around the base of the abdomen. The Cyprian and Syrian are vigorous bees, resembling the Italian in appearance, noted especially for late fall breeding and a decidedly vicious disposition.

Hives were formerly mere boxes, from which there was no way of removing the honey except by suffocating the bees. The business of bee-keeping was practically revolutionized by the invention 1851 of the movable frame hive by the Rev. L. L. Langstroth. Other hives, embodying the main principle of the Langstroth, have been invented; and the bee-keeper is enabled to keep his colonies clean and healthful, protect them from moisture and sudden variations of temperature, and secure the surplus honey without injury to the bees. Eight or more frames, in each of which a comb can be made, are placed in each hive, and either of the frames can be taken out at any time. In a common form of hive, the walls are double; and the space between them is filled with chaff, to absorb the moisture formed in the hive. Where many bees are kept, a bee-smoker will be needed. By the use of this simple implement, the most vicious bees can be quickly subdued, so the owner can handle them at will. An extractor, which removes the honey without injury to the comb, and allows the latter to be refilled by the bees, enables the owner to obtain the honey in the purest condition, and, by preventing the necessity of making new comb, largely increases the quantity of honey produced. A bee-feeder, a knife for uncapping the combs, a veil to protect the face, and gloves for the hands of the bee-keeper, also will be required. A machine for making comb foundation will be needed in a large apiary; but where only a few bees are kept, the quantity required can be purchased for a small sum. When the hives are well filled, usually toward the last of May in the n. states, the bees will swarm. If the colony is strong, a second swarm will follow in about 8 days, and a third may follow 3 or 4 days later. One of the best methods of hiving swarms is by carrying among the bees an open box fastened on a pole,

They will probably enter the box, from which they can easily be induced to enter the hive. If the bees alight on a bush or tree, they can be secured in the same manner. The person handling the bees must be quiet and careful, and be protected by a veil and gloves. Under certain circumstances, artificial swarming is practiced with benefit. Artificial feeding with a syrup made of pure granulated sugar and water will stimulate the bees to early and active work in the spring, and it is sometimes beneficial between the periods at which the different classes of flowers are in full bloom. Before attempting to remove the honey, a little smoke should be blown into the hive. This will cause the bees to begin feeding, and in a few minutes they will become quiet, and the work can be safely performed. Where the cold is not severe, double-walled hives packed with chaff will be sufficiently warm to keep through winter strong colonies which have plenty of food; but at the n., some form of protection will be required. Protection will save food and cause the production of young bees, which will become strong workers early in the season. It may be afforded in cellars or in bee-houses, which should be dry and dark, with facilities for ventilation and controlling the temperature, which should be kept at 40° to 45°. The hives should be moved to winter quarters before the weather becomes very cold, and when they are perfectly dry. A strong colony of bees will need 30 to 40 lbs. of honey during the winter.—Among the enemies from which bees suffer are several varieties of birds, ants, mice, and the bee-moth, the latter far the worst. By the use of improved hives, keeping the colonies strong, and simple expedients for trapping the moths, these enemies can be prevented from doing much damage. The principal diseases to which bees are exposed are dysentery and foul brood. The former is caused usually by dampness, want of pure air, or other improper conditions. Foul brood is a fatal and contagious disease affecting the brood in the cells. All affected comb should be promptly destroyed, and the hives cleansed with boiling water, followed by a strong solution of borax and salicylic acid.—Wild bees are the property of the man on whose land they are found; but a swarm of domestic bees which is followed or can be identified by the owner of the original colony can be claimed wherever they may alight. Until the invention of movable frame hives, bee-keeping was a precarious business; but this improvement, the introduction of numerous appliances for facilitating the work, and the diffusion of information, through books and papers, concerning the habits of the bee and methods of management, have made it reasonably safe, and under favorable conditions it is very profitable.

BEE, HUMBLE: see HUMBLE-BEE.

BEECH, n. *bēch* [AS. *bece:* Ger. *buche:* Icel. *beyki:* L. *fagus*]: a large forest-tree having a smooth bark, producing mast or nuts; the *Fāgus sylvātĭca*, ord. *Cupulif'ĕræ* or *Corylācĕæ*. BEECH-MAST, the nuts of the beech-tree. BEECH-OIL, an oil obtained from beech-nuts. BEECH-OWL, the Tawny Owl, *Syrnium stridula*. BEECH-WHEAT, a plant, *Polygonum fagopyrum*. BEECHEN, a. *bēch'ĕn*, made of beech. BEECH'Y, full of beech; consisting of beech.

BEECH (*Fagus*): genus of trees of the nat. ord. *Cupuliferæ* (q.v.). The male catkins are almost globose, stalked, their flowers consisting of a bell-shaped 5–6-cleft perianth

Common Beech.

and 8–15 stamens. The female flowers, which grow on the same trees, consist chiefly of a germen with three awl-shaped styles, and are situated two or rarely three together within a stalked involucre, which bears on its outer surface many fleshy threads. This involucre, after the flowering is over, closes and forms a husk resembling a sort of capsule, which when ripe opens in four valves, is externally covered with soft spines, and encloses one or two (rarely three) triangular nuts, which bear the name of *Beechmast*.—The species are not numerous; all of them are forest-trees of great beauty.—The COMMON B. (*F. sylvatica*) forms whole forests in many parts of Europe. It grows to a height of 100–120 ft., and a diameter of 4 ft.; and particularly when standing alone becomes a very ornamental tree with far-spreading branches, which often droop gracefully almost to the ground. It has thin, ovate, obscurely toothed leaves, finely ciliated on their margins. Its bark is smooth, often of a

whitish color; and it is remarkable for the frequency with which hard wooden knobs—abortive branches—occur in its bark. The B. thrives best in light soils, and does not send its roots deep into the ground, but rather horizontally under the surface. The wood is more or less of a reddish-brown color, as the tree has grown in a dense forest, or has been freely exposed to sun and air. It is very hard and solid, but brittle; and when exposed to the open air, very liable to rot and to be eaten by worms. It is therefore not adapted to the purposes of the house-carpenter; but when kept always under water, it is very durable, and is accordingly employed in the erection of mills, and for weirs, sluices, etc. It is also employed for many purposes by cabinet-makers and turners.

The so-called Red B. of N. America is regarded now as only a variety of the American B. (*F. ferruginea*), with 'softer wood.' There are a number of fine cultivated varieties, the purple, the silver, etc. *F. ferruginea* is distinguished from the European B. by longer, thinner, less shining leaves, which are oblong-ovate, tapering to a point with straight veins running to the coarse teeth; the bark, light gray and unbroken. It forms extensive forests in the northeast states and the adjoining British possessions, and extends south along the Alleghanies. The wood is of reddish or rusty color and is valuable.—Two species of B. are found on the mountains of Java; four are natives of the more elevated parts of the s. of New Zealand; several belong to the s. of S. America. The genus is, in fact, more characteristic of the colder latitudes of the s. than of the n. hemisphere. *F. betuloides* (also known as *F. Forsteri*) is the 'myrtle-tree' of the mountains of Tasmania—a very large tree with evergreen leathery leaves, in form much resembling those of the birch, although the general habit of the tree agrees with that of other beeches. The same species is the evergreen B. of Terra del Fuego, where it forms forests of which the dark green foliage contrasts strikingly in winter with the dazzling snow. The wood is too heavy and brittle for masts, but makes tolerable planks, and is carried to the treeless Falkland Islands for roofing houses. *F. Antarctica* grows farther up the mountains about the Strait of Magellan. It has deciduous leaves, and much resembles the common B.—*F. procera* grows in the Andes of Chili, and attains a majestic size. It is a valuable timber-tree.

BEECH-DROPS: see CANCER ROOT.

BEECHER, *bēch'ėr*, CATHERINE ESTHER: 1800, Sept. 6—1878, May 12; b. East Hampton, N. Y.; dau. of Lyman B. She was educated at a seminary in Litchfield, Ct., and at the death of her mother, while Catherine was still a young girl, was obliged to take charge of the family. Later she was engaged to Prof. Fisher, of Yale College, who was lost at sea. Her father having married again, she opened a school for young ladies, 1822, in Hartford, Ct., which she continued for 10 years, assisted for a part of the time by her sister Harriet, afterwards Mrs. Stowe. While thus occupied

Miss Beecher also prepared elementary text-books for scholars.

In 1832, she went to Cincinnati with her father, and there opened a seminary for young women, which she discontinued at the end of two years on account of her health. From this time forward she devoted herself to plans for the education and advancement of women; in this pursuit travelling widely, particularly in the West and South. During the latter part of her life, Miss Beecher suffered greatly from physical disability. She died at Elmira, N. Y. Her published works comprise the following: *Letters on the Difficulties of Religion* (1836): *The Moral Instructor* (1838); *Treatise on Domestic Economy* (1842); *Housekeepers' Receipt Book* (1845); *Duty of American Women to their Country* (1845); *True Remedy for the Wrongs of Women, with a History of an Enterprise having that for its Object* (1851); *Letters to the People on Health and Happiness* (1855); *Common Sense applied to Religion* (1857); *An Appeal to the People as the Authorized Interpreters of the Bible* (1860); *Religious Training of Children in the School, the Family, and the Church* (1864); *Woman's Profession as Mother and Educator, with Views in Opposition to Woman Suffrage* (1871); and *Housekeeper and Healthkeeper* (1873). Associated with her sister, Mrs. Harriet Beecher Stowe, Miss Beecher wrote the following: *The American Woman's Home* (1869); *Principles of Domestic Science, as applied to the Duties and Pleasures of Home* (1870); *Domestic Receipt Book; Memoirs of George Beecher* (1844); and *Truth Stranger than Fiction* (1850); all these being apart from her general educational purposes. As with most persons of much force, she had many 'fads' and eccentricities; but she was a high-minded, accomplished, and charming woman, full of wit and executive capacity.

BEECHER, Charles: clergyman: b. Litchfield, Conn., 1815, Oct. 7; d. Haverhill, Mass., 1900, Apr. 21; son of Lyman B. He studied at the Latin School, Boston, and Lawrence Acad., Groton, Mass., graduating at Bowdoin 1834. He took a theol. course at Lane Seminary, O., and was ordained pastor of the Second Presb. Church, Fort Wayne, Ind., where he remained 1844–51. For the next four years he was stationed at Newark, N. J., and 1857–81 at Georgetown, Mass., excepting 1870–77, when he resided in Florida. B. was author of: *The Incarnation, or Pictures of the Virgin and Her Son* (1849); *King David and His Throne* (1855); *Pen Pictures of the Bible* (1855); *Autobiography and Correspondence of Lyman Beecher* (1863); *Redeemer and Redeemed* (1864); *Spiritual Manifestations* (1879): *Eden Tableau* (1880). He selected the music for the *Plymouth Collection of Hymns and Tunes.*

BEECHER, Charles Emerson, American palæontologist: b. Dunkirk, N. Y., 1856, Oct. 9; d. New Haven, Conn., 1904, Feb. 14. He graduated at the University of Michigan 1878, studied under Prof. James Hall at Albany, N. Y.; in 1888 was given a position in this department at Yale; in 1892 was made professor of historical geology;

and in 1892 succeeded Prof. O. C. Marsh as professor of palæontology and curator of the geological collections. He wrote over 50 papers for scientific periodicals, and the proceedings of scientific societies, chiefly on evolution, especially as illustrated by the growth and structure of trilobites, and on the classification of trilobites and brachiopods; a number of these and similar studies on other organisms were collected as *Studies in Evolution* (1901), one of the Yale bicentennial publications. He also published a memoir on the *Brachiospongidæ* in the Yale Peabody Museum Memoirs (1889).

BEECH'ER, Edward, D.D.: clergyman: b. East Hamdton, N. Y., 1803, Aug. 27; d. Brooklyn, N. Y., 1895, July 28; son of Lyman B. After graduating at Yale, he studied theology at Andover and New Haven, became tutor in Yale 1825, and then took charge of the Park Street Church (Congl.), Boston, where he remained 1826–30. He was then elected pres. of Illinois College. He held this office till 1844, when he returned to Boston and became pastor of the Salem Street Congl. Church. From 1855–70 he was a Congl. pastor at Galesburg, Ill. He was for some years a prof. in the Chicago Theol. Sem. He finally retired from the ministry in 1872, and settled in Brooklyn. His works include: *Address on the Kingdom of God* (1827); *Six Sermons on the Nature, Importance, and Means of Eminent Holiness throughout the Church* (1835); *History of Alton Riots* (1837); *Statement of Anti-Slavery Principles, and Address to People of Illinois* (1837); *Baptism; Its Import and Modes* (1850); *Conflict of Ages* (1853); *Papal Conspiracy Exposed* (1855); *Concord of Ages* (1860); *History of Opinions on the Scriptural Doctrine of Future Retribution* (1878). Of his books, the two most discussed were *The Conflict of Ages*, and *The Concord of Ages*, a transference into terms of Christian theology of the doctrines of pre-existent and continuously existent souls and the dualism of good and evil, the struggle of the two being prolonged into a future life and good finally triumphant.

BEECHER, Henry Ward: 1813, June 24—1887, Mar. 8; b. Litchfield, Ct.; son of Lyman B. He received an early training of a severe character, and it is related of him that when a boy be evinced a strong tendency towards a seafaring life, which he doubtless would have followed but that a religious 'revival' awakened in him impressions which turned his attention in another direction. His preparatory studies were at Boston Latin School, and at Mount Pleasant Institute, Amherst, Mass., and he graduated at Amherst College, 1834, afterwards studying theology at Lane Seminary, where his father was president. His first pastorate was in Lawrenceburg, Ind., 1837, during which he married Eunice White Bullard, dau. of Dr. Artemus Bullard. In 1839, he had a church in Indianapolis, and there remained till 1847, when he was called by the newly formed Plymouth Church (Congl.), Brooklyn, N. Y., with which he was identified for the remainder of his life

From the beginning of his experience as a pastor, Mr. B. became renowned as an orator, and his reputation in this regard soon spread over the entire country. This was owing partly to his departure from the usual conventionalities of pulpit oratory, using humor, sarcasm, and irony to illustrate or strengthen his discourses whenever such aids seemed to him desirable. An exceedingly close observer of human nature, he was apt and picturesque at characterization, his sermons thus becoming exceedingly dramatic; their reputation for this quality in fact awakened such general interest as to draw crowds of the strangers visiting New York and Brooklyn on every Sunday through all the years of his preaching.

Originally liberal in his ideas, this tendency grew upon him, until towards the latter part of his life he had departed in many particulars from the extreme orthodox belief even of the more liberal Congregational churches. So wide did this departure become that in 1878 he renounced belief in the doctrine of eternal punishment as commonly held; and in 1882, from a wish not to cause his brother ministers to be held responsible for his views, he withdrew from the Association of Congl. Ministers. His church, however, though heartily conceding to him his liberty on this and other points, and declaring his preaching still most spiritual, evangelical, and edifying, did not change its own creed, nor leave the fellowship of Congl. churches.

For more than a quarter of a century, Mr. B., renowned as perhaps the foremost of living preachers, was known in America and Great Britain in many other departments. No great question of public interest arose during his career in which he did not take sides one way or another. As a platform orator and lecturer his career was remarkable, while the topics of his discourses covered every feature of public life.

On the formation of the republican party in 1856, Mr. B. became one of its first members, and from that time forward he addressed political meetings whenever any grave question was before the country. Yet, although a republican, during the exciting presidential canvass of 1884 he supported Grover Cleveland, and by this course lost many friends and admirers. He worked in the anti-slavery cause from the beginning of the period when it assumed prominence as a political issue. The outbreak of the rebellion found him firm on the side of the Union: and in 1863 he did extraordinary service in visiting Great Britain, where he made public addresses to large and frequently adverse audiences, endeavoring to state the cause at issue in the United States fairly before the English people, and to disabuse the public mind of the wrong views which had taken possession of them. During the course of these speeches in England he was frequently met by violent antagonism in his audiences, on which occasions he showed such sagacity, tact, and readiness, with such nerve and personal courage, as, with his unsurpassed eloquence, excited the admiration even of those most opposed to him, and won friends by scores of thousands to the side of the Union. In 1865, April, on the

occasion of the anniversary of the fall of Fort Sumter, Mr. B., by request of the U. S. govt., delivered an oration at the fort.

The generally popular flow of Mr. B.'s life was disturbed in 1874 by the outbreak of what is known as the 'Beecher Scandal.' Charges were made against Mr. B. by Theodore Tilton of improper intimacy with the latter's wife. This accusation aroused a tremendous feeling throughout the United States and abroad, wherever Mr. B.'s great reputation had established itself; and while the subject was made a matter of general discussion and consideration, a committee of Plymouth Church was charged with investigating the complaint. They reported the accusation to be baseless. This conclusion, however, did not end the matter, for Mr. Tilton began a civil suit for damages against Mr. B., and the case was tried in Brooklyn, the trial occupying six months, and the jury at its close failing to agree. The verdict stood three for the plaintiff and nine for the defendant, the charge being therefore returned 'not proven.' Through the whole painful discussion Mr. B. bore himself with an unchanging gentleness: indeed, his nature, always so fiery against injury to others, seemed incapable of malice, and slow to anger in his own behalf.

While this scandal and its discussion undoubtedly affected Mr. B.'s reputation in the minds of many of his former friends, it is doubtful if it interfered with his general popularity, or caused any general withdrawal of public confidence from him. His church was as much crowded during the last ten years of his life as before, while he continued to be in such demand in the lecture field that even his high charge of $500 or $1,000 a night did not prevent him from receiving more offers of engagements than he possibly could fill. But although, between the large salary paid him by his church, and his enormous receipts from lecturing and writing, Mr. B.'s income was very large, he never accumulated a fortune. His manner of living was far from being extravagant, but he possessed little business capacity, and was at no period of his life in a state of undisturbed affluence. His residence in Brooklyn was plain, and his mode of living inexpensive, but he had a handsome country-seat at Peekskill-on-the-Hudson, where he laid out a large amount of money. He was fond of fine pictures and books, and was an expert in gardening and tree-culture.

Mr. B.'s literary life was no less comprehensive and effective than either his religious or his political career. As early as 1836, he was an editor, having charge of a religious weekly, *The Cincinnati Journal;* and during his pastorate in Indianapolis he was editor of an agricultural paper, *The Farmer and Gardener.* He was one of the founders of the *Independent* (New York), to which he was for 20 years a regular contributor, and 1861–63 its editor. From 1870 to 1878, he was editor of the *New York Christian Union.* At one time he contributed a series of papers to the *New York Ledger* under a special and very favorable contract with Robert Bonner, the proprietor. All of these different papers and contributions, as well as his sermons, were from

time to time published in book form, and had an immense circulation.

Among his published works are: *Lectures to Young Men on Various Important Subjects* (1844); *Freedom and War: Discourses Suggested by the Times* (1863); *Aids to Prayer* (1864); *Eyes and Ears* (1864); *Norwood, or Village Life in New England*, a novel (1867); *Overture of Angels* (1869); *Life of Jesus the Christ: Earlier Scenes* (1891); *Lecture Room Talks: a Series of Familiar Discourses on Themes of Christian Experience* (1870); *Yale Lectures on Preaching* (3 vols., 1872–74); *A Summer Parish: Sermons and Morning Services of Prayer* (1874): and *Evolution and Religion* (1885). His addresses, sermons, and miscellaneous works include also: *Army of the Republic* (1878); *The Strike and its Lessons* (1878); *Doctrinal Beliefs and Unbeliefs* (1882); *Commemorative Discourse on Wendell Phillips* (1884); *A Circuit of the Continent* (1884); and *Letter to the Soldiers and Sailors* (1866, reprinted with introduction, 1884). He also edited the *Plymouth Collection of Hymns and Tunes* (1855), and *Revival Hymns* (1858).

Besides the works published in book form in his own name, there have been numerous collections and compilations made by different persons from his sermons, speeches, addresses, and books, including the following: *Life Thoughts* (1859), by Edna Dean Proctor; *Notes from Plymouth Pulpit* (1859), by Augusta Moore; *Pulpit Pungencies* (1866); *Royal Truths* (1866); *Prayers from Plymouth Pulpit* (1867); *Sermons by Henry Ward Beecher, selected from Published and Unpublished Discourses*, edited by Lyman Abbott, 2 vols. (1868); *Morning and Evening Devotional Exercises*, edited by Lyman Abbott (1870); and *Comforting Thoughts*, by Irene Ovington (1884).

The first volume of Mr. B.'s *Life of Christ* having been published 1871, he had at the time of his decease completed the second and concluding volume, which was published 1891. His biography was written by Lyman Abbott (published 1883), and a new life, written by his son, William C. B., and his son-in-law, the Rev. Samuel Scoville (1888), includes an unfinished autobiography.

BEECHER, Lyman, D. D.: 1775, Apr. 2—1863, Jan. 10; b. New Haven, Ct; son of David B., a blacksmith, descended from English ancestors who emigrated to New England, settling in New Haven in 1638. Lyman lost his mother while he was an infant, and was adopted by an uncle, and trained in blacksmithing and farming. Developing a marked taste for study, he was placed in the charge of the Rev. Thomas Bray, by whom he was fitted for college, and entered Yale at the age of 18, taking his theological course under Pres. Dwight. He graduated 1797, and the following year was licensed to preach, and after supplying a pulpit at East Hampton, N. Y., was ordained 1799. He now married Roxanna Foote, who, to assist in their support, opened a private school. He remained at East Hampton until 1810, when he became pastor of a Congl. church

in Litchfield, Ct., where he continued for 16 years, obtaining in that time the reputation of being the leading clergyman of that denomination.

In 1826, Dr. B. became pastor of Hanover St. Church (Congl.), Boston, but in 1832 resigned from this to accept the presidency of Lane Seminary (Presb.), newly founded at Walnut Hills, near Cincinnati, O. Here he continued 20 years, in the meantime becoming an important factor in the movement for temperance, and in that against slavery.

In 1852, Dr. B. resigned from Lane Seminary, and settled in Boston. From this time his health deteriorated, and a few years later a stroke of paralysis nearly wrecked his mental powers. The last ten years of his life he lived in Brooklyn, N. Y., with his son, Henry Ward.

Dr. B. was possessed of great mental power, and though not deeply learned was eloquent and capable of producing an extraordinary and permanent impression upon those who heard him. He was gifted with a powerful will and great determination, and a wide human sympathy; his religious belief has been called moderate Calvanism. In 1835, he, as one of the 'New School' leaders, was tried by the Presb. Church on charges of heresy, but he was acquitted. The trial was the beginning of a theological controversy, which ended in dividing the Presbyterian Church.

Dr. B. received his degree of A. M. from Yale College, 1822, and that of D. D. from Middleboro College, 1818.

He wrote *Remedy for Duelling* (1809); *Plea for the West; Six Sermons on Temperance;* and *Sermons on Various Occasions* (1842); *Views in Theology; Scepticism; Lectures on Various Occasions;* and *Political Atheism.* A collection of the most important of his works was published in 3 vols., Boston, 1852.

Dr. B. was three times married, and had thirteen children, of whom his seven sons became Congregational ministers.

BEECHER, Thomas Kinnicutt: American clergyman; son of Lyman Beecher: b. Litchfield, Ct., 1824, Feb. 10; d. Elmira, N. Y., 1900, Mar. 14. He studied at Illinois College, of which his brother Edward was president, graduating in 1843. He was principal of a Philadelphia grammar-school 1846-8, of the Hartford (Conn.) High School till 1852. He then removed to Williamsburg (Brooklyn), N. Y., and founded a Congregational Church, which he left two years later for the pastorate of a church in Elmira, N. Y., where he spent the rest of his life, well known as an unsectarian philanthropist and moral teacher, writer, and lecturer, editing for many years a weekly department in Elmira newspapers to discuss current questions, often with rasping originality and always with independence. He was nominated for a variety of offices by nearly every known political party, but never elected. He was a chaplain in the Army of the Potomac four months in 1863. In 1870 he published a series of lectures as a book, entitled *Our Seven Churches* (of Elmira); and in 1901 a posthu-

mous collection of his juvenile stories was issued, *In Tune with the Stars.*

BEECHER, Willis Judson: American clergyman and author: b. Hampden, Ohio, 1838, April 29. He was graduated from Hamilton College in 1858, and from Auburn Theological Seminary in 1864, and filled several Presbyterian pastorates. From 1865–9 he was professor of moral science and belles-lettres in Knox College, Ill., and in 1871 became professor of the Hebrew language and literature in Auburn Seminary. He has published *Farmer Tompkins and his Bible* (1874); *Drill Lessons in Hebrew* (1883); *Index of Presbyterian Ministers in the United States* 1706–1881 (1883); *Old Testament Notes* (1897), and hundreds of articles in newspapers, periodicals, cyclopædias and reference books.

BEECHEY, *bē'chĭ*, Frederick William: 1796, Feb. 17—1856; b. London; son of Sir William B. He entered the navy when he was ten years of age, and at the age of fifteen was in an engagement off the coast of Madagascar, in which three French frigates were captured. In 1818, he took part under Franklin in a scientific voyage of discovery to the north pole, of which the results were published by order of the Admiralty (1843). For the services he rendered with his pencil during this voyage, B. received a grant of £200 from parliament. In 1819, he was engaged in another Arctic expedition under Sir Edward Parry; and in 1821, rendered other important services to science by his exploration of part of the n. coast of Africa, of which the results were published 1828. After being appointed commander, Captain B., 1825, received a commission to proceed by the Pacific Ocean and Behring's Strait to the Polar Sea, in order to communicate, if possible, with Franklin, who was to make the journey overland from N. America. The explorers did not meet, although at one time they were within 150 m. of each other. He returned 1828, having been two years and a half away, and in 1831 published a narrative of his voyage, and afterwards an account of the botany and zoology of the Arctic regions. Port Clarence and Port Grantley, to the s.e. of Cape Prince of Wales, were discovered by B., 1827. He was afterwards engaged in surveying the coast of Ireland and of S. America; and was made Rear-admiral of the Blue, 1854.

BEECHEY, *bē'chĭ*, Sir William, r. a.: 1753, Dec. 12—1839, Jan.; b. Burford, Oxfordshire: English portrait-painter. He entered the Royal Acad. as a pupil, 1772, and in 1793 he was chosen portrait-painter to Queen Charlotte, of whom he painted a full-length. In the same year he was elected an associate of the Royal Acad.; and in 1798, he received the honor of knighthood, and was made a Royal Academician for his picture of the Review of the 3d and 10th Dragoons in Hyde Park by George III. (accompanied by the Prince of Wales and Duke of York), which is reckoned B.'s greatest work. Most of the members of the royal family, as well as of the court nobility, sat to him for por-

traits. Among his portraits are those of Lord Nelson (preserved in the Clothier's Hall, London), Sir William Hamilton, Lord St. Vincent (in Fishmonger's Hall), Lord Cornwallis, John Kemble, and Mrs. Siddons. Though B. is not a portrait-painter of first rank, his portraits are characterized by easy attitude and naturalness of expression. He d. at Hampstead.

BEECHING, *bēch'ĭng*: HENRY CHARLES: English clergyman and author: b. 1859, May 15. He was educated at Balliol College, Oxford, was rector of Yabbendon, Berkshire, 1885-1900, was professor of theology at King's College, London, from 1900 to 1903; chaplain of Lincoln's Inn 1900-3; canon of Westminster Abbey since 1902; and examining chaplain to the Bishop of Carlisle since 1905. He has published editions of Milton, Vaughan, Daniel, Drayton, and several anthologies of verse; and is author of *Love in Idleness* (1883); *Love's Looking Glass* (1891); *Seven Sermons to Schoolboys* (1894); *In a Garden and Other Poems* (1895); *Pages from a Private Diary* (1898); *Conferences on Books and Men* (1900); *Inns of Court Sermons* (1901); *Religio Laici* (1902); *Jane Austen* (1902); *Two Lectures on Poetry.*

BEE'DER: cap. of the dist. of B. in the Nizam's dominions; about 75 m. n. w. of Hyderabad; near the right bank of a tributary of the Godavery; occupying a table-land about 2,400 ft. above the sea, and about 100 ft. above the adjacent country. Though B. was formerly a place of grandeur and importance, it is now remarkable chiefly for its manufactures in a compound metal made of tin, copper, lead, and zinc. Pop. 14,000. Pop. of dist. of B. (also spelt *Bedar* and *Bidar*) about 800,000.

BEE-EATER (*Merops*): genus of birds of the order *Insessores* and tribe *Fissirostres;* type of a family, *Meropidæ* nearly allied to that of the Kingfishers. The birds of the B. family have rather long, slightly arched beaks, and long, pointed wings; they are mostly of a green color; resemble swallows in flight; and, like them, prey on insects, but chiefly on bees, wasps, and other hymenopterous insects. Their skin is very thick. The species of the genus *Merops* are numerous in Africa and Asia; none are known in America; two are European, one of which, the Common B. (*M. apiaster*), is common in the s. of Europe as a summer bird of passage. It is mentioned by Aristotle, under the name *Merops*, as very destructive to bees. It seizes them on the wing, and also often watches near their hives, and at the mouths of wasps' nests. It breeds in holes, which it excavates in the banks of rivers.

BEEF, n. *bēf* [F. *bœuf:* OF. *boef*, an ox: It. *bove*—from L. *boven*, an ox]: the flesh of bovine animals. BEEVES, *bēvz*, plu. of BEEF when the animals are meant: ADJ, consisting of beef. BEEF-STEAK, n. *-stāk*, a slice of beef raw or cooked. BEEF-TEA, a liquid decoction of beef. BEEF-WOOD, the wood of an Australian tree resembling beef in appearance; various species of *Casuărīnă* (q. v.), ord.

Casuārīnā'cēæ, yielding excellent timber; the cassowary-tree. BEEF-WITTED, having a heavy, ox-like intellect; dull of understanding; stupid.

BEEF: see FOOD AND DRINK: DIET.

BEEF-EATER (*Buphaga*): genus of birds, of the order *Insessores*, tribe *Conirostres*, to which the name Ox-pecker is also and more correctly given. The beef-eaters have short bills, square at the base, and rather swollen towards the point. They are accustomed to sit upon the backs of buffaloes, camels, and other large animals, and to feed upon the larvæ of gadflies, which they find in their hides. They are exclusively African.

BEEF-TEA: a light and pleasant article of diet, generally prepared by placing the beef (as lean as possible) in cold water, which is gradually heated, and then allowed to *simmer* for two hours or so; but the best method appears to be to commence by chopping the meat small, adding the cold water, and rapidly heating so as to bring it to a boil. A little salt is then added, to suit the taste. Either process, by commencing with cold water, succeeds in dissolving out of the meat the savory natural juices which it contains to the extent of about one-eighth of its weight. Occasionally hard-toasted bread, in fragments, is added to the tea just before being partaken of, which imparts to it some of the nutritious qualities of the bread: in using the B., the bread may or may not be eaten. The popular notion that the B. contains all the nourishing constituents of the entire amount of meat employed in its preparation is erroneous, as much nutritious matter is resident in the seven-eighths of the original meat, left as residuary fleshy fibre, though the latter would be of difficult digestion. The chemical constituents of B. are *gelatine; albuminous matter; kreatine*, a substance resembling *theime*, the essential principle of tea and coffee; *extractive matters* (*osmazome*), to which the B. owes most of its odor and flavor, and a part of its nutritious qualities; *lactic acid; salts; a little fat; saccharine matter*, and *water*. B. is highly palatable, and from its very easy digestion, it is recommended to invalids and convalescents. Mutton, treated in a similar manner, yields a broth or tea not so easily digested, and hurtful to persons of weak stomach, especially if the fat be not skimmed off from the liquid. A knuckle of veal affords a similar broth or tea; but it is not so light as B., and moreover, gelatinizes on cooling. A broth or tea prepared from a young chicken is, of all decoctions of animal matter, the most readily digested, and is specially suitable for invalids, where great irritability of the stomach exists. See MEAT EXTRACT.

BEELZEBUB, n. *bē-ĕl'zĕ-bŭb* [Gr.—from Heb. *baal*, lord; *zebub*, a fly—*lit.*, the god of flies]: name under which the people of Ekron, in Philistia, worshipped their god Baal (q. v.) or Bel. The more correct reading of the word is BEELZEBUL—an opprobrious change of name, making it signify 'god of dung.' See BAAL.

BEEN, *bĭn* [AS. *beon*]: pp. of the verb *be*.

BEER, n. *bēr* [AS. *beor;* Ger. *bier;* F. *bière,* beer, drink: Gael. *bior,* water; may be connected with *bere,* barley]: an intoxicating liquor made from prepared barley, called malt, and hops; a liquor made by infusion and fermentation from any vegetable substance; term applied to a fermented liquid which has not undergone the process of distillation. The term *malting* is always associated with barley, although a few other vegetable substances have been substituted as a raw material. The manufacture of B. comprises two distinct processes—*malting* and *brewing.* These are often conducted as separate industries in different buildings or places. The process of malting necessarily precedes that of brewing. See BARLEY: MALT.

Malting.—This process, or the conversion of barley into malt, consists in: (1) steeping; (2) sweating; (3) germinating; (4) drying.

Steeping.—The barley is placed in large circular wooden or metal tubs, and just covered with water. It is then allowed to remain at a moderate temperature 30 to 70 hours, but usually not longer than two days. During this time the barley absorbs about all the water added, and increases from one-tenth to one-half of its own weight. When a grain of barley held lengthwise between the finger and thumb breaks into a pulpy or mealy mass, the purpose of steeping, i.e., the softening and hydration of the starch and softening of the albumen, has been accomplished. About 80 bu. of Canadian barley will increase in bulk by absorption of water in the steeping-tub to 100 bu. Any excess of water is then drawn from the steeping-tub, and the moist barley is then thrown into a heap, or 'couch.'

Sweating.—Another term for this portion of the process is 'couching.' This consists in simply allowing the moist barley to lie in a heap on the floor, usually of asphalt or cement, for the purpose of starting the germination or growth of the barley. It was formerly shoveled into couch-frames, but this requires more labor, and the grain is liable to pack and turn sour. The temperature begins to rise slowly, and after the barley has remained in a heap about 24 hours, the temperature has risen about 10°, and some of the water has been expelled. During this sweating process the germ of the barley begins to grow, and, taking its nourishment from the albumen, increases rapidly until its further growth is checked.

Germinating.—The moistened and steeped barley is then spread over an asphalt or cement floor, to a depth of 12 to 15 inches, and is rapidly turned from time to time, being spread over a larger surface and in thinner layers with each turning. The temperature is kept at 50° to 60° F. during this portion of the process, and the stem begins to grow under the husk, from the same end as the root, but appears at the opposite end of the grain, and is allowed to grow until the length of the sprout is one-half the length of the grain. This plumule or sprout would become a green leaf if allowed to grow; and maltsters differ as to its properly allowable length. Increased growth, beyond a certain point, means loss of starch with corresponding loss in weight.

Drying.—The barley, moistened and partly germinated, is thrown into a chamber called a kiln, which has a floor of woven wire, sheet iron, or perforated tile. The heat rising from below, and passing through the moist barley, rapidly dries it, and the moisture escapes through a lattice-like chimney in the roof of the malt-house, where it is often seen issuing like steam. The starch, hydrated by steeping and converted into sugar and dextrin by germination, is preserved in this condition by stopping further chemical action by drying it in a kiln at 125° to 180° F. The color of the beer depends largely upon the temperature of the kiln: the higher the temperature, the more complete is the change of starch into sugar, dextrin, and caramel, which impart the varying depth of color to beer, ale, and porter.

The chemical changes which occur in converting barley into malt are shown in the following table:

	Barley.	Malt.
Soluble albuminous compounds	1·258	1·985
Insoluble albuminous compounds	10·928	9·771
Husk	19·854	18·817
Dextrin	6·500	8·232
Fatty matter	3·556	3·379
Inorganic matter	2·421	2·291
Extractive matter	0 896	4·654
Starch	54·282	50·871
Loss	·305	.....
	100·000	100·000

This is the method of malting as practiced universally until quite recently. Of late many improvements have been introduced into both the malting and brewing industries, and a system of revolving drums is now substituted in a very large number of malt-houses for the old process of germination on the floor. This, called the Galland-Henning drum system, is now extensively used in the United States and in Europe as an improvement on the old German method of 'flooring.' By this process the barley is germinated, or malted, by a current of warm air passing through revolving drums. More uniform results are obtained in less time with less labor and much less floor space than by 'floor malting.'

Brewing.—The brewing of malt may be divided into six stages: (1) Grinding; (2) Mashing; (3) Boiling; (4) Cooling; (5) Fermenting; (6) Clearing. A further stage, Storing, formerly in use, is now almost entirely dispensed with by modifications in the preceding stages.

Grinding.—When the malt is received at the brewery, it is first passed between revolving steel rollers, and in this way is coarsely bruised, rather than ground, so that the grain can be readily saturated with water in the next stage.

Mashing.—This is the brewers' term for infusion, and is to the brewer what the 'drawing' of tea is to the housewife: it extracts the strength. This stage of the process is conducted usually in a large vat or tank, called a mash-tun. The ground or crushed malt is mixed with the proper quantity of water (the composition of the water is important in

brewing—the most suitable being 'hard' and free from organic matter), and the mass, or 'mash,' is then agitated by a series of arms radiating from the centre of the tun, stirring every portion of the mash. The temperature is kept at about 160° F., and under these conditions there is developed a further quantity of a substance, diastase, which converts the starch of the malted barley into glucose, or grape-sugar. This change begins immediately, or, in fact, was begun during the germination of the barley, when its further production at that time was arrested by increasing the temperature and drying the malt. The temperature best suited for the action of diastase, 140° to 160° F., is maintained for two or three hours, and at the end of that time the 'wort' has a very sweet taste, because the starch has been entirely converted into sugar. The action of the diastase is so rapid that most of the conversion occurs during the first few minutes, but a longer time is allowed and fresh water at about 190° F. is added. This extract, or 'wort,' contains the saccharine, albuminous, and mineral constituents of the malted barley. It is sampled from time to time, and tested to determine its strength. The only portion of the malted barley not now in solution is the chaff or husk: this, with the small quantity of gluten, starch, and sugar which it contains, is called 'grains,' and is fed to cattle. See MALT REFUSE. The extract obtained by this process of mashing is drained off into another large vat, and passes into the third stage of brewing.

Boiling.—This is conducted in a large closed vat, in which the wort is mixed with hops, and kept at the boiling point until the aromatic oil, resin, and tannin are extracted from the hops; this usually requires 1 to 2 hours, depending on the kind of beer to be brewed. After the extraction of the aromatic and bitter principles of the hops, and the separation, by boiling, of the mucilage or glutinous matter still remaining in the wort, it passes to the fourth stage.

Cooling.—The wort is now cooled by allowing it to flow in a cascade over an upright coil of copper pipes, through which ammonia or cold brine is driven.

Fermenting.—When the liquid has been cooled to 50° or 60° F., it is conveyed into a fermenting vat, where it is mixed with yeast, and fermentation begins. During fermentation, the sugar (which the diastase has prepared from the starch) is converted by the yeast into alcohol. The stronger the wort, the more yeast is required. Carbonic oxide is at the same time produced in large quantity; and this gas, partly confined for a time by the gluten and water, fills the remainder of the vat with froth, which diminishes in quantity as the fermentation approaches the end. It is necessary, however, to sample the beer after the apparent conversion of the sugar into alcohol, and, by an instrument called the saccharometer, observe the density of the wort, and note whether any sugar remains. After all the sugar has been converted into alcohol, and the beautiful mounds of snow-white froth have disappeared, the fermenting stage is completed.

Clearing.—This consists in merely skimming off the yeast (from which is made the compressed yeast of commerce), and—till recent years—in running the beer into casks to be stored in the *lager* or cellar for several months, to ripen or mature by further completing the process of fermentation. This was the common way of making B. by the old process of slow fermentation; but during the past few years, the time required has been reduced from several months to 10 days, by what is known as the Phaudler vacuum process. This process, by which the fermentation is conducted in large metallic tanks, connected with an exhaust to remove the carbon dioxide, combines the main fermentation of the fermentation vat with the 'ruh' (German *still* or *quiet*) fermentation of the 'lager' by removing the carbon dioxide as rapidly as it is formed—thereby retaining the health of the yeast plant, and greatly improving the flavor of the B. It enables the brewer to make a better B. in 10 days than was formerly made in 3 to 5 months. Moreover, it saves the great expense of large storage cellars, and is the most beneficent improvement in modern brewing.

The principal constituents of B., as well as of ale, stout, and porter, are water, alcohol, sugar, albuminoids, and the extractive matter of the hop. The amount of alcohol varies from one to 10 per cent. The following table shows the average composition of B. manufactured in the United States and in Germany:

	United States.	Germany.
Alcohol	4·34	3·95
Extract	6·149	5·78
Ash	0·270	0·234
Phosphoric acid	0·0636	0·077
Potash	0·0835	0·066
Albuminoids	0·9880	0·440
Specific gravity	1020	1016.5

Adulterants.—The starch, or glucose, prepared from corn or rice is used as a substitute for barley; but B. is now rarely adulterated with such things as cocculus indicus, quassia, aloes, grains of paradise, or any such substances, formerly used more or less.

The former practice of dropping a cube of sodium bicarbonate (baking-soda) through the bung-hole of the barrel to give 'head' to the B. is now being discarded; and instead the B. is charged with carbonic oxide gas from a cylinder in which the gas has been liquefied by pressure. The use of this method of charging is increasing very rapidly. The alkali of the bi-carbonate is objectionable, and causes some of the albuminoids to separate. This is avoided by use of the liquefied gas; and when the vacuum process is used for rapid fermentation, a bright, clear, and strong B. of excellent keeping quality is produced.

In S. America, long before the Spanish conquest, the Indians prepared a B., from Indian corn, called *chica*. This maize-beer is still brewed, and by a rude process whose

principles are similar to those above indicated. The *chica* is made also from barley, rice, pease, manioc, pineapples, and grapes. The Crim Tatars prepare a B. from millet seed, called *bouza*, or millet beer. The same seed is used in Sikkim, on the s. slopes of the lower Himalaya, and yields a B. there called *murwa*. The Arabians, Abyssinians, and many African tribes employ *teff*, or the seeds of *Poa Abyssinica*, and millet seed as sources of B. The Russians prepare a B. from rye, called *quass*, or *rye-beer*. The Tatars ferment milk into *koumiss*, or milk-beer. The Arabians use milk to yield their *leban*, and the Turks to produce their *yaourt*. In the n. of Scotland, the Orkneys, and parts of Ireland, buttermilk or *sour-milk* is allowed to stand till fermentation begins, and an intoxicating liquor results. The South Sea islanders prepare a B. from the root of *Macropiper methysticum*, or *the intoxicating long pepper*, which is called Ava (q.v.).

See further, ALE: LAGER BEER: PORTER: FERMENTATION: FERMENTED LIQUORS: HOP.

BEER: The number of establishments engaged in the brewing of malt-liquors in the United States at the taking of the last Federal census, 1900, was 1,509, with a capital of $415,284,463. The average number of wage-earners engaged was 39,532, receiving in wages an aggregate of $25,826,211. The cost of material used was $51,674,928, and the value of product was $237,269,713.

In 1909, 1,801,043 gallons of malt liquors, in bottles or jugs, were imported into the United States. The aggregate import, not in bottles or jugs, was 5,105,062 gallons. The aggregate value of both classes was $3,215,407. The consumption of imported malt liquors, 1908, was 7,314,126 gallons; domestic 1,821,418,322 gallons. As compared with 1898, there was an increased consumption of imported liquors of 4,856,778 gallons. This increase was greater in proportion than that of domestic malt liquors, the records showing that the increase in the decade of domestic malt liquors consumption was only 659,649,208 gallons.

Comparison of domestic and exported beer consumption in the United States with that of the United Kingdom reveals the fact that the former consumes the most, the British aggregate being 1,500,709,000 gallons. Germany's aggregate is higher than that of Great Britain, that country's total consumption being 1,782,778,000 gallons. The next largest aggregate is of Austria-Hungary, 545,674,043 gallons. Then come in their order, Belgium, 395,285,258 gallons; France, 289,103,000; Russia, 151,633,892; Denmark, 63,213,000, and Sweden, 44,440,000.

It is interesting to note that the liquor traffic in one city, New York, including, of course, beer and other liquors under the new liquor tax of April 30, 1905, yielded a net revenue for the year ending September 30, 1909, embracing all boroughs, of over $11,000,000, $5,500,000 of this going to the state.

BEER, SALE OF: traffic in various femented liquors; subject to legal restriction in various countries.

In England, the laws of 1869, 70, 72, and 74—applying also to sale of wines and liquors by retail in refreshment houses—make the following requirements: During Sundays, all licensed houses must be shut except between 12½ or 1 P. M. and 2½ or 3 P. M., and between 6 P.M. and 10 or 11 P. M., the justices having a slight power to vary these hours. A fixed time of opening and closing is prescribed for week-days. Though the houses are closed for part of Sundays, yet travellers and lodgers are exempted in most cases, and can be supplied as usual with liquors. License to sell beer is confined under heavy penalties to that particular privilege. The place where beer is exclusively sold is called a *beer-house*, differing in this respect from an *ale-house*, which means a place where other liquors as well as beer are retailed. The term *public-house* applies to the second most frequently.

In the United States, the laws restricting this traffic differ greatly in different states. See LICENSE FOR SALE OF INTOXICATING DRINK: LOCAL OPTION: PROHIBITION: also the cross-references.

BEERBOOM, or BIRBHUM, *bērb-hôm′*: dist. in the lower provinces of Bengal; 1,756 sq. m.; between n. lat. 23° 35′ and 24° 23′, and between e. long. 87° 7′ and 88° 4′. The chief town is Suri, 100 m. n. n. w. of Calcutta, and after it the dist. is sometimes named. It has hot springs, iron mines and limestone deposits. The chief agricultural product is rice; there is also a large silk-worm industry.

BEERS, *bērz*, ETHEL LYNN (ELIOT): author: 1827, Jan. 13—1879, Oct. 10; b. Goshen, N. Y.; descendant of John Eliot (q. v.), translator of the Bible into the lanquage of the Pequot Indians. She married William H. Beers, and having been a writer of verses before her marriage, continued to contribute to magazines, etc. She died in Orange, N. J.—Her poem '*All Quiet along the Potomac*' (pub. as *The Picket Guard* in *Harper's Weekly* 1861) made a profound impression: the authorship was disputed, but was fully decided in her favor. Later she wrote *Weighing the Baby, Baby Looking Out for Me, Which shall it be?* and other pieces which achieved deserved popularity. Her poems were collected (1879) under the title *All Quiet along the Potomac, and Other Poems.*

BEERS, HENRY AUGUSTIN: author; b. Buffalo, N. Y., 1847, July 2. He graduated at Yale 1869; was asst. prof. of English from 1875. He passed five months at Heidelberg studying, and was made full prof. of English 1880. B. wrote *A Century of American Literature* (1878); *Life of N. P. Willis* (1885); *Selections from Willis's Prose Writings* (1885); a second collection of verses, *The Thankless Muse* (1885); *The Ways of Yale* 1895); *A History of English Romanticism in the Eighteenth) Century* (1899); *A History of English Romanticism in the Twentieth Century* (1901); *Points at Issue* (1904); etc.

BEERS, William George: Canadian dentist: b. Montreal 1843, May 5. He was educated in his native city, and having entered the dental profession, he founded the first dental journal in Canada, and remained its editor for several years. In 1900 he was editor of *The Dominion Dental Journal* (Toronto), and dean of the Provincial Dental College, as well as professor of dental pathology, therapeutics, and materia medica in McGill University. He wrote the first book on the game of lacrosse, and is regarded as its originator. He organized and captained the first lacrosse team that visited England in 1876, and also the second one in 1883. He is noted as a lecturer and public speaker, and since 1862, has been a constant contributor to the principal American magazines.

BEERSHEBA, *bē-ėr-shē'ba*, or Biresseba, *bir-ĕs-sē'ba* ('well of the oath,' or 'well of the seven'): a place in Palestine, so called because here Abraham entered into an alliance with Abimelech, King of Gerar, which he ratified with an oath and a gift of seven ewe lambs. B. was on the s. border of Palestine, about 52 m. s. w. from Jerusalem, and formed the limit in that direction of the Israelitish dominion. It was one of the most ancient as well as one of the most interesting places in sacred record. After the captivity, B. was occupied for some time by the Jews, and in the 4th. c. after Christ, it was a Roman garrison. Afterwards, the Crusaders are said to have fortified it and to have regarded it as a place of importance. Two circular wells of fine pure water—the largest 44 ft. deep to the surface of the water, and 12½ ft. in diameter—and a heap of ruins about half a mile long and a quarter broad, remain to mark the place where B. once was.

BEES-WAX, see Bee: Wax: also Candle.

BEET, n. *bēt* [F. *beete:* Ger. *beete:* L. *bēta*]: genus of plants of the natural order *Chenopodiaceæ* (q. v.), distinguished by a 5-cleft perianth, five stamens inserted on a fleshy ring surrounding the ovary, and the fruit adhering to the calyx, and collected in clusters of two or three. The species are not numerous; they are mostly biennials, with smooth, ovate, stalked root-leaves, and tall, leafy, flowering-stems. They are natives of the temperate parts of the old world. The Common B. (*B. vulgaris*) is a native of the shores of the Mediterranean, but is now in very general cultivation both in fields and gardens, chiefly for the sake of its large succulent roots, used as food for man and domestic animals, the manufacture of sugar (see Beet-root Sugar: Sugar Beet), and, to a limited extent, as a substitute for malt. The form of the root varies from long to almost globular, and the color ranges from a very dark red to almost white The B. can be grown on a variety of soils, but a light loam which has been highly enriched is specially favorable. The land should be plowed, and the surface finely pulverized. Manure, if used, must be thoroughly decomposed. Commercial fer-

tilizers are often of great benefit. For an early crop, sowing is to be done as soon as the ground is dry in the spring, but for roots to be kept through the winter it is deferred till June or July, according to latitude. The seed is sown thickly in drills 12–18 in. apart, rather deeply covered, and the soil packed firmly upon it. From 5 to 8 lbs. per acre are requisite. When well started the plants are to be thinned to stand 4–9 in. apart; 2 or 3 plants are to be left in a place, but the number should subsequently be reduced to one. The young plants are often used for greens. The crop must be kept clean by cultivation, hoeing, and, if necessary, hand-weeding; but in all operations, from thinning to harvesting, great care must be taken to avoid cutting or bruising the roots or the leaves. Harvesting is to be done before there are hard frosts. The tops should be cut at least half an inch from the bulbs. The bulbs should not be allowed to wilt, but should be placed in boxes, or barrels in a cool cellar and covered with a little dry earth. When large quantities are grown they should be stored in pits in the field so constructed as to be protected from frost. The Mangel-Wurzel (q. v.) is largely grown for cattle. The Swiss Chard (*B. Cycla*) has no edible root, but is grown for its leaves used as spinach. The midrib of the leaf is quite large and is sometimes used as asparagus. It is a beautiful plant. The Sea B. (*B. marina*) is grown exclusively for greens. The Chillian B. (*B. Chiliensis*), recently introduced from Chili, is cultivated for ornamental purposes. More than 80 varieties of the B. are grown in the U. S. Of these more than 30 are classed as either Sugar Beets or Mangel-Wurzels. As a vegetable the root of the garden beet is boiled, pickled, and used as a salad; and the tops are boiled as 'greens.' They contain on an average 88.5 per cent. water; 1.5 per cent. protein; 8 per cent. nitrogen-free extract; 1 per cent. ash; 0.1 per cent. ether extract, and 0.9 per cent. crude fibre. Mangels are fed to cattle; they contain from 7 per cent. to 15 per cent. dry matter, of which about 88 per cent. is digestible; an average percentage composition may be taken as: water, 90.9; protein, 1.4; nitrogen-free extract, 5.5; ether extract, 0.2; ash, 1.1; crude fibre, 0.9. About 77 per cent. of the protein or 96 per cent. of the nitrogen-free extract is digestible. The dry matter of mangels and corn silage are of about equal value for feeding, but as the cost of production in mangels is double that in corn, stockmen in the United States have not paid much attention to them. Beets are sometimes injured by the beet-fly, otherwise they have few insect enemies.

BEET-FLY (*Anthomyia Betæ*): insect which sometimes infests crops of mangel-wurzel, and other kinds of beet, depositing its eggs on the leaves, the soft parts of which the larvæ devour. It is a dipterous insect of the family *Muscides*, and belongs to a genus of which very many species are known, the larvæ of some of which are well known as feeding upon the roots of cabbages, turnips, etc. See CAB-

BEETHOVEN.

BAGE-FLY: TURNIP-FLY: POTATO-FLY. It is not so large as the common house-fly.

BEETHOVEN, LUDWIG VAN, *bā'tō-vėn:* 1770, Dec. 17 —1827, March 26; b. Bonn; d. Vienna: unrivalled composer, whose works have made a new epoch in the development of music. His father, a tenor-singer in the elector's chapel at Bonn, began to cultivate the genius of his son when only five years of age. He next placed him under the court-organist, Vanden Eeden and afterward under the composer Neefe. In his eighth year he created astonishment by his performance on the violin; when only eleven, he played the music in Bach's *Wohltemperirtes Klavier;* and in his thirteenth year he published, at Mannheim, a volume of variations on a march, songs, and sonatas. In 1792, he was sent to Vienna by his patron, the Elector of Cologne, to enjoy the instructions of Haydn, who first made him acquainted with the works of Händel. He also studied composition under Albrechtsberger. There he soon attracted notice by his extraordinary ability as an extempore player of fantasias, and also by some compositions, which, however, did not escape the censure of critics. He became so much attached to Vienna that, after his patron's death in 1801, he determined to remain, and declined an invitation to England. In 1809, when another offer tempted him to leave Vienna, several friends of music, with the Archduke Rudolf at their head, raised a subscription to provide for the composer a pension sufficient to retain him. At Vienna, therefore, he stayed during the remainder of his life, secluded from the world, of which he knew as little as it knew of him; and in later years, still more isolated from society by a defect of hearing, which gradually became confirmed into entire deafness. In this sad inviolable solitude, he produced his new symphonies, his sublime overtures, his quintets and quartets, so full of profound conceptions and mysterious revelations of the highest harmonies, and his pianoforte sonatas, which express, sometimes, a peculiar train of feelings, at other times appear to represent his own recluse character. Shut out in a large measure from the ordinary pleasures of life, ignorant of the sweetness of married life, and able to enjoy only in a slender measure social intercourse, he retired for compensation into the world of his own imagination, and brought forth from its deep resources those treasures of harmony which, though at first received with a shy astonishment rather than a cordial admiration, are now ranked among the works of art which cannot die. These new forms and original creations, which display B.'s majestic powers in music, were only gradually developed; in his early productions, he submitted to established forms of composition.

The works of B. may be divided into three classes, or may be assigned to three distinct periods of his intellectual development. All the works of his first period, though important, show the influence of his teacher Haydn, or of

his more highly esteemed model, Mozart. This period of composition may be said to extend to his 16th orchestral work, including, besides several pianoforte sonatas, trios for pianoforte and for stringed instruments. All these early works display the highest cultivation of the forms and principles of art previously established in the Viennese school of music.—The second period of B.'s artistic life, in which his genius was completely self-reliant, extends from the 16th to the 80th work. This was certainly the most productive and brilliant part of his career. To it belong his greatest creations, his magnificent and powerful orchestral works—symphonies, overtures, etc.—all of which display the highest qualities of imaginative composition. Besides the great orchestral works, it includes many sonatas for pianoforte, and various compositions of chamber-music — septets, quintets, quartets, trios, serenades, etc. In dramatic composition, B. produced only one opera, but this was *Fidelio*, the first truly German musical work of a dramatic character. This was the result of great study, and, as it is now given, is the reconstruction of an earlier composition. Other dramatic pieces are—the overture, interludes, and melodramatic music in Goethe's *Egmont*, and the instrumental music and choruses in the *Ruins of Athens*.—In the third and last period of B.'s career we find those two gigantic works, the *Missa Solemnis in D minor*, and the ninth symphony (D minor) with chorus. These works transcend all common laws and forms, and belong to the highest sphere of art. Their depth and mystery can be apprehended only by those who have deep emotions and profound technical knowledge of music. Other works of this last class approach those just mentioned, though they do not reach the same elevation. But all are alike in passing far beyond the ordinary traditional forms of art. All are pervaded by an impulse as of inspiration. Among these works may be mentioned the great quartets for bow-instruments (mostly published after the death of B.), the grand overtures—works 115 and 124—and several sonatas for pianoforte, especially that in B-flat major.

The life of B. has been written by Schlosser, Schindler, Moscheles, Marx, Nohl, Thayer (1866–71). See also Nottebohm, *Skizzenbuch Beethoven's*.

BEETLE, n. *bēt'l* [AS. *bitel*, the biter—from *bitan*, to bite]: a general name of insects having a horny wing-cover. BEETLE-HEADED, dull; stupid.

BEETLE, v. *bēt'l* [AS. *beotan*, to threaten: OE. *bitel*, biting, sharp—from AS. *bitan*, to bite]: to jut out and hang over; to hang or extend out. BEET'LING, imp. jutting. BEETLED, pp. *bēt'ld*. BEETLE-BROW, a projecting brow. BEETLE-BROWED, a. having prominent or projecting brows.

BEETLE, *bē'tl:* a name popularly applied to many kinds of coleopterous insects. It is never extended to insects of any other order, and it is sometimes used in works on natural history as a common name for all coleopterous insects; but this makes it to include many kinds to which it is not

popularly applied, as fireflies, lady-birds, weevils, cantharides, etc. It is also employed by some authors in a more restricted sense, as a designation of the insects forming the large tribe *Scarabæides;* but the restriction, equally with the extension, is an interference with the popular use of the English word, of which, however, the limits are very uncertain. To consider the B., with strict regard to that popular use, and at the same time to science, would be neither easy nor profitable, as the assemblage of kinds would be not only large, but very miscellaneous. See COLEOPTERA: SCARABÆIDÆ: BOMBARDIER BEETLE: STAG BEETLE: BURYING BEETLE: GOLIATH BEETLE: ROSE BEETLE: etc. The name BLACK BEETLE is often given to the COCKROACH (q.v.): see also BLAPS.

BEETLE, n. *bēt'l* [AS. *byteł*, a mallet: Ger. *beutel*, a mallet for beating flax—from BAT 1, which see]: a heavy wooden hammer or mallet. BEETLING, a finishing mechanical process applied originally to linen shirting, afterwards to cotton shirting, in imitation of linen, to give the cloth a hard and wiry look, by flattening the yarn irregularly in an angled manner. This is done by the rising and falling of upright wooden stampers, placed close together in a row, with their square butts resting on a roller over which the cloth passes under them, doubled in a particular way so as to give the yarn an angled appearance when struck. The stampers are worked by the rotation of a horizontal shaft, acting with tapets, like the cylinder of a barrel-organ.

Linen weft is likewise beetled, but by hand-hammering, on a large flat stone, with a wooden mallet, to soften this yarn for easiness of working it, or 'getting it on,' in the language of the craft, in weaving. Beetling is likewise a process in flax-dressing, to separate the woody from the flexible fibres of the plant. See FLAX-DRESSING.

BEE'TLE-STONE: name given by the lapidaries of Edinburgh to hard nodules of clay ironstone, found abundantly in a low cliff, composed of shale, at Newhaven, or strewed upon the beach in that neighborhood. They take a beautiful polish, and have been employed to make letter-weights and other ornamental articles. The name was given in consequence of the supposed origin of the fossil which is of most frequent occurrence as the nucleus of the nodules, which, however, is not a fossil beetle, but a coprolite (q.v.). Some of the nodules contain a fossil fish, and some a fossil of vegetable origin.

BEET-ROOT SUGAR: sugar obtained from the beet, similar to cane sugar and equally good. In 1747 Margraff, a chemist, and a member of the Berlin Acad. of Sciences, discovered that sugar was one of the constituent elements of the beet root. He believed that the way was thus opened for the establishment of a great industry, but his methods were imperfect and he did not live to see any practical results from his discovery. About 50 years later, Achard, one of his pupils and his successor as a director of the Acad., adopted a different process, and was far more suc-

cessful. In 1799 he sent to the Institute of France a sample of the sugar, a description of the method by which it was obtained, and a statement that the cost of manufacture need not exceed 6 cents a pound. The Institute appointed certain of its members to test the matter. After following the processes of Margraff and Achard, and various modifications of these methods, by which they obtained a fair percentage of sugar, they made a long report in which they expressed the opinion that the cost of production was so high that the beet would never be likely to come into competition with the sugar cane—an opinion which subsequent events have proved incorrect, as more than 60 per cent. of the sugar now produced in the world is made from beets. In 1801 Achard succeeded in establishing a factory, and during the next few years, in spite of ridicule and opposition, many other factories were built in Germany, while in France, under the protective policy of Napoleon, the industry was considerably developed. In Russia, also, factories were established and govt. aid was granted. The great European wars, 1812–15, almost crushed the industry, but it slowly revived, and by 1830 was again established in France, by 1835 in Germany, and since 1840 it has been very rapidly developed. In the United States, the first experiments in manufacturing sugar from beets were made at Philadelphia 1830; but the persons in charge knew little about the cultivation of the roots or the manner of extracting sugar, and no results were obtained. Eight years later, D. L. Child, of Northampton, Mass., made about 1,300 lbs. of sugar from beets at a cost of 11 cents a lb. Little more seems to have been done till 1863, when Germans established a factory in Ill., which, owing to unfavorable conditions of climate and soil, proved a failure. The first successful beet sugar plant in the U. S. was erected in Alvarado, Cal., in 1876. The census of 1900 showed 31 factories for the mauufacture of beet sugar, and since that time, numerous other plants have been erected in Mich., Cal., Iowa, and other states.

As the neck of the beet contains a poor quality of juice, together with mineral salts, it is removed before the process of sugar-making is commenced. When the roots are to be used immediately, this is done at the time of harvesting, but if they are to be stored, it is usually deferred till they are taken to the factory. Some growers remove the leaves, but others store the whole plant. The roots must not be allowed to wilt, and great care must be taken to prevent bruising when they are handled. In cold climates the roots are stored in heaps (sometimes entirely above ground, though in some cases the earth is excavated to a depth of 12–18 in.), 4–6 ft. wide, the same in depth, and as long as required, which are lightly covered with earth. As the cold grows severe, the covering is increased, but it is necessary to guard against heating as well as freezing In a mild climate, like that of portions of Cal., little or no protection is required. Under the most favorable conditions, roots which are kept very long lose a portion of their

sugar. When the beets reach the factory they are placed in large tanks, in which they are thoroughly washed by machinery. They are then carried by an elevator to a machine which cuts them into thin slices. The juice is extracted by means of a press, or by the diffusion process. The latter is the more recent method, and is considered a great improvement over the former. The clarification of the juice is much more difficult than is that of the juice of the sugar cane. It is accomplished by treating with lime, afterward by carbonic acid, and filtering. These operations are repeated, though with a reduced quantity of lime, till the object is secured. By boiling in vacuum pans, the juice is then converted directly into sugar, or else into a syrup, which is subjected to another evaporation. By these processes raw sugar is obtained. When refined sugar is desired, the juice and syrup are treated with bone-black, and the crystals of sugar are washed in a centrifugal machine.

The profitable manufacture of beet-root sugar depends on a combination of favorable conditions. The processes of extraction have been brought to a high degree of perfection, but large capital is required for establishment and proper equipment of a factory and the carrying on of the business. The choice of a location, also, is of very great importance, as no degree of skill in manufacture can atone for an error in this respect. There are soils which are very productive, but which yield beets of poor quality, as they are deficient in sugar or contain large proportions of mineral salts. Some localities otherwise favorable are subject to drought, excessive rainfall, or extreme heat in summer; and in other sections cheap labor cannot be obtained. The farmer cannot afford to take the risk of producing a crop without a contract for the product of a certain area of land; and, as the yield is unknown, the manager of the factory is liable to lose by failing to obtain a sufficient supply of beets to keep his factory running, or by engaging more than he can handle. In the United States, the manufacture of sugar from the beet-root is obliged to compete with European makers, who have had much experience, and who have great advantage in securing labor and obtaining roots; he must compete, also, with the manufacturers of cane sugar at home and abroad. There is undoubtedly a large area of land in this country in which the cultivation of the beet for sugar can be made profitable. The production in the United States increased from 2,800 tons in 1890 to 384,010 tons in 1908. The production in Europe, as officially reported for 1908 in long tons, was: Germany, 2,080,000; Austria, 1,398,000; France, 802,000; Russia, 1,265,000; Belgium, 258,000, and Holland, 214,000; the world's total being 6,775,000 tons of 2,240 lbs.

BEETS, *bāts*, NICOLAUS: Dutch poet and writer: b. Haarlem, 1814, Sept. 13. He studied theology at Leyden, and after serving at Heemstede, near Haarlem, he was in

1854 appointed to the pastorate of Utrecht, and in 1874 to the chair of theology there. His poetical works have been collected (4. vols., 1873–81). Through the earlier pieces runs a strong vein of misanthropic sentiment, due probably to Byron, some of whose works he translated into Dutch (2 vols., 1835–7). His prose writings include *Camera Obscura* (13th ed., 1880), a series of tales and sketches of life and scenery in Holland, published under the pseudonym of HILDEBRAND; they display keen observation and considerable humor. Besides several critical works, he published in theology, notes on the life of St. Paul (3d ed., 1858), and *Stichtelijke Uren* (new ed., 8 vols., 1872).

BEFALL, v. *be-fawl'* [*be* and *fall*]: to happen to; to come to pass BEFAL'LING, imp. BEFELL, pt. *bĕ-fĕl'*. BEFALLEN, pp. *bĕ-fawl'ĕn*.

BEFIT, v. *bĕ-fĭt'* [AS. *be;* F. *fait*, wrought]: to suit; to become. BEFIT'TING, imp. BEFIT'TED, pp.

BEFLATTER, v. *bĕ-flăt'tėr* [*be*, and *flatter*]: to load with flattery.

BEFOG, v. *be-fŏg':* to involve in a fog. BEFOGGED', pp. and a.

BEFOOL, v. *bĕ-fôl'* [AS. *be;* F. *fol*, idle]: to lead astray to delude. BEFOOL'ING, imp. BEFOOLED, pp. *bĕ-fôld'*.

BEFORE, prep. *bĕ-fōr'* [*be*, and *fore:* AS. *beforan*]: in front of; in presence of: AD. in front; further onward; earlier. BEFOREHAND, ad. *bĕ-fōr'hănd*, sooner in time; previously; at first. BEFORE'TIME, ad. *-tīm*, formerly; of old time.

BEFOUL, v. *bĕ-fowl'* [*be*, and *foul*]: to make foul; to soil; to entangle; to run against or amongst. BEFOUL'ING, imp. BEFOULED', pp. *-fowld'*.

BEFRIEND, v. *bĕ-frĕnd'* [*be*, and *friend*]: to assist; to favor; to aid in a difficulty. BEFRIEND'ING, imp. BEFRIENDED, pp. *bĕ-frĕnd'ĕd*. BEFRIEND'MENT, *-mĕnt*, the act of befriending; the state of being befriended.

BEG, v. *bĕg* [from *bag*, as when alms were uniformly given in kind, the bag was a characteristic of the beggar; a corruption of AS. *bedecian*, to beg—*lit.*, to ask something for the bag or wallet]: to ask earnestly; to beseech; to entreat; to solicit charity; to take for granted; to assume. BEG'GING, imp. BEGGED, pp. *bĕgd*. BEGGAR, n. *bĕg'gėr* [compare Gael. *baigean*, a little bag; *baigear*, a beggar]: one who is poor and asks charity; one much reduced in circumstances; one who begs: V. to reduce to poverty. BEG'GARING, imp. BEGGARED, pp. *bĕg'gėrd*, reduced to poverty by misfortune or misconduct. BEG'GARLY, a. *-lĭ*, mean; poor: AD. meanly. BEG'GARLINESS, n. *-lĭ-nĕs*, poverty; meanness. BEGGARY, n. *bĕg'gėr-ĭ*, a state of great poverty. BEG'GABLE, a. to be obtained certainly or perchance, if begged for. BEGGING THE QUESTION, assuming the truth of the very thing to be

proved. BEGGAR-MY-NEIGHBOR, a game of cards. *Note.* —The early association of *beg* with *bag* arose from a popular theory; *beg*, to bid often, appears rather to be a frequentative of *bid*—see Skeat.—SYN. of 'beg': to ask; request; beseech; supplicate; entreat; implore; solicit; adjure; crave; desire.

BEG, n. *bĕg* [Turkish *beg*=*bā*], or BEY, *bā:* Turkish title, rather vague in its import, and commonly given to superior military officers, ship-captains, and distinguished foreigners. More strictly, it applies to the governor of a small district, who bears a horse-tail as a sign of his rank. The governor of Tunis has this title. —'Beglerbeg,' or, more correctly, Beilerbegi ('lord of lords'), is the title given to the governor of a province who bears three horse-tails as his badge of honor, and has authority over several begs, agas, etc. This superior title belongs to the governors of Rumelia, Anatolia, and Syria.

BEGA, *bē'ga* [Mahratta, Hind., etc., *bigha*]: in *India*, a land measure equal to about one-third of an acre.

BEGAS, *bā'gâs*, KARL: 1794—1854, Nov. 23; b. Berlin: court-painter to the king of Prussia, prof. and member of the Acad. of Art in Berlin; received his first lessons in painting from Philippart, at Bonn. In 1811, he went to Paris, where he spent eighteen months in the studio of the celebrated Gros. In 1815, Frederick William III. on the occasion of his visit to Paris, bought a large original painting by B., *Job surrounded by his Friends*, and gave him two commissions for different churches in Berlin. This led to his moving thither, 1818, and to his subsequently residing in Italy at the King's expense. On his return to Berlin, 1825, he painted many biblical subjects for churches, as well as other pictures. There are frescoes of colossal size by him in the new church of Sacrow, near Potsdam. He is especially distinguished for the animation and individuality of his portraits, and painted for the king a gallery of celebrated authors and artists, including Humboldt, Schelling, etc. Several of his *genre* paintings have been rendered familiar by repeated engravings; and his works, in general, are eminent for expression, rich coloring, and a peculiarly clear chiaro oscuro.

BEGASS, n. *bĕ-găs'* [Sp. *bagázo*, trash, the remains of pressed sugar-cane or grapes, etc.]: the sugar-cane after being cut and crushed: also spelled BAGASSE and MEGASS. See BAGASSE.

BEGET, n. *bĕ-gĕt'* [AS. *begittan*, to obtain: *bigitan*, to find]: to generate; to produce; to cause to exist. BEGET'TING, imp. BEGOT', pt. BEGOTTEN, pp. *bĕ-gŏt'n.* BEGET'TER, n. one who.

BEGG, ALEXANDER: Canadian author: b. Quebec, 1840, July 10. He was educated in Aberdeen, Scotland, and in St. John's, P. Q. He was the pioneer of Canadian trade (1867) in Manitoba and in the Northwest Territories. During the rebellion of 1869 he advocated representative

government for the people. In 1878–84 he was deputy treasurer of the province of Manitoba. He was commissioner for Manitoba to the Dominion Exhibition in 1879, and had charge of the Manitoba exhibits through Ontario, Quebec, and the Maritime Provinces in 1879–80. His works include *Dot it Down; The Creation of Manitoba; A Story of the Saskatchewan; A Practical Guide to Manitoba; Ten Years in Winnipeg; A History of the Northwest* (3 vols.), etc.

BEGGING QUESTION. That fallacy of argument in which an individual appears to prove what he has really assumed. The assumption may either be deliberate or unconscious, and is ordinarily concealed by the use of words which have a different sound and appearance but which are identical in meaning. The classical name in logic for this fallacy is *Petitio Principii.* Examples of it are 'Whoever refuses to believe in the inspiration of the Bible makes the Most High a deceiver; for has He not told us that 'All Scripture is given by inspiration of God'?' Related forms of the fallacy are the 'Question begging epithet' (in which an epithet such as 'nefarious policy,' 'astute policy,' is used to produce a prejudice in favor of the conclusion one is supposed to prove); and 'The circular argument' ('in which a conclusion is based upon a premise which in an earlier stage of the argument was itself based upon this very conclusion'—see CIRCULUS IN PROBANDO), e. g. 'Any man who would marry such a woman must have something wrong with him.' 'Why, what is the matter with his wife?' 'It is matter enough that she is willing to marry such a man as he is.' (Aikins.)

BEGHARD, or BEGUARD, n. *bĕ-gârd'* [F. *bégard:* Ger. *beghart*]: an order of St. Francis, which aimed at great purity, held no property, and subsisted by daily begging.

Note.—This word seems to have had the same origin as *béguin*, the women in mid. L. being called the *beghīnæ*, and the men *beghardi.* See BEGUINES.

BEGHARMI, or BAGIRMI, *ba-ghēr'me:* country in central Africa; bounded on the n. by Lake Tchad; on the w. by the Shari, or Great river, which divides it from the kingdom of Bornou, and on the e. by the Waday kingdom. It extends s. to about lat. 10° n. Its greatest length is about 240 m., breadth 150. The whole of B. proper is flat, with a slight inclination towards the n., its general elevation being about 1,000 ft. above the level of the sea. The outlying provinces in the s.e. are slightly mountainous. B. has three considerable rivers flowing through and along its borders—the Bénuwé, Logon, and Shari; the last of which, augmented by the Logon, is more than 600 yards across at Mele. There is, in general, however, the utmost scarcity of water in the country, and the inhabitants guard their wells with jealous care. The soil is composed partly of sand and partly of lime, and produces the grain and fruit common to countries of central Africa. Worms and ants are very destructive to the crops. The total

population is about a million and a half. From the numerous deserted villages, the population appears to have been much greater formerly. Mohammedanism has been introduced among them, but many are still pagans, and all are grossly superstitious. The only industrial arts are weaving and dyeing. The sultan is absolute in his own dominions, and several smaller states are tributary to him; and he, in his turn, is tributary to the more powerful ruler of Waday. The fighting-force of the kingdom is about 13,000 men. Masena (q. v.), the capital, has a circumference of about 7 miles.

BEGILT′, a. [*be*, and *gilt*]: gilded over.

BEGIN, v. *bĕ-gĭn′* [AS. *onginnan* or *beginnan*]: to commence; to enter upon something new; to take the first step. BEGIN′NING, imp.: N. first cause; origin; first state; the rudiments. BEGAN, pt. *bĕ-găn′*. BEGUN, pp. *bĕ-gŭn′*. BEGIN′NER, n. one who takes the first step; an author of a thing; one without experience. *Note.*—The fundamental meaning of *begin* seems to be, 'to attain to;' 'to come into being;' 'to produce;' and may thus really have its origin in such roots as Gr. *genos;* L. *genus*, kind, sort, race: Gael. *bith*, life; and *gin*, to procreate—see Wedgwood and Mackay.—SYN. of 'beginning, n.': commencement; origin; original; rise; source.

BÉGIN, *bā-zhăṅ*, LOUIS NAZAIRE, Canadian clergyman: b. Levis, Quebec, 1840, Jan. 10; educated at the College of St. Michael de Bellechasse, the Seminary of Quebec, Laval University, and the Grand Seminary of Quebec. About the time of his graduation from the last institution its trustees decided to found a theological department in connection with Laval University, and it was their wish that the faculty of this theological school should be educated in Rome. Therefore Dr. Bégin, who had been elected a member of the faculty, was sent to Rome in 1863, and remained abroad till 1868. During this time he traveled extensively and studied many branches of theology. On his return to Quebec he was appointed professor of dogmatic theology and ecclesiastical history in Laval University and held the chair till 1884. He became principal of the Laval normal school in 1885; was appointed bishop of Chicoutimi in 1888; coadjutor to Cardinal Taschereau, with the title of Archbishop of Cyrene, in 1891; in 1894 became administrator of the Province of Quebec, and since 1898 has been Archbishop of Quebec. His works include *La Primauté et l'Infaillibilité des Souverains Pontifes; La Sainte Ecriture et la Régle de Foi* (1874); *Le Culte Catholique* (1875); *Aide-mémoire, ou chronolique de l'histoire du Canada* (1886); *Catechisme de Controverse* (1902); etc.

BEGIRD, v. *bĕ-gėrd′* [AS. *begyrdan*]: to surround with a girdle; to encompass; to encircle. BEGIRD′ING, imp. BEGIRD′ED, or BEGIRT′, pp. BEGIRT′ING, a. in *OE.*, girdling; encompassing.

BEGKOS, *bĕg′kŏs*, or BEIKOS, *bā′kōs:* a large village of

Anatolia, on the Bosphorus, 8 m. n.n.e. of Scutari, said to be the locality of the contest between Pollux and Amycus, in which the latter was killed. See ARGONAUTS.

BEGLERBEG, *bĕg'lĕr-bĕg:* see BEG.

BEGNAW. v. *bĕ-naw'* [*be,* and *gnaw*]: to eat away; to bite. BEGNAWN, pp. *bĕ-nawn',* eaten away.

BEGONE, int. *bĕ-gŏn'* [impera. of *be,* and pp. of *go:* Dut. *begaan,* touched with emotion: AS. *bigán,* to go about]: go away, emphatically; depart. WOE-BEGONE, *wō' bĕ-gŏn,* oppressed with woe.

BEGONIA, n. *bē-gō'nĭ-ă* [after *M. Begon,* a French botanist]: an interesting genus of plants common in gardens, ord. *Begon'ĭăcĕæ;* elephant's ears—so named from the form of their leaves.

BEGONIACEÆ, *be-gō-ni-ā'sē-ē:* nat. ord. of exogenous plants, the place of which in the system is doubtful, but is supposed by Lindley to be near *Cucurbitaceæ* (q.v.). The B. are herbaceous or suffruticose plants, with alternate leaves, which are oblique at the base, and have large, dry stipules. The flowers are in cymes, unisexual, the perianth colored, with four unequal divisions in the male flowers, and five or eight in the female; the stamens are numerous; the fruit is membranous, winged, 3-celled, bursting by slits at the base, the seeds minute.—The order contains about 160 known species, all of which have pink flowers. Almost all are tropical plants, and some of them are often to be seen in house-cultivation; but a small species of *Begonia* grows on the Himalaya at a height of at least 11,500 ft., often growing on the trunks of trees. The leaves of the *Begonias* have a reddish tinge. The leaves and young stems are succulent and acid, and those of *B. Malabarica, B. tuberosa,* and other species, are used as pot-herbs, or in tarts. The juicy stalks of a large species found in Sikkim, at an elevation of five or six thousand ft. are mentioned by Dr. Hooker as employed to make a pleasant acid sauce. The roots of some are used in their native countries as astringents, and some of the Mexican species are used as drastic purgatives.

BEGOT, v., BEGOT'TEN, v. [see BEGET]: procreated.

BEGRIME, v. *bĕ-grīm'* [Dut. *begremen,* to blacken—from AS. *be:* Sw. *grums,* dregs, mud: Dan. *grime,* a spot of dirt on the face (see GRIME)]: to sprinkle all over with powder; to soil deeply all over with dirt. BEGRI'MING, imp. BEGRIMED, pp. *bĕ grīmd'.*

BEGRUDGE, v. *bĕ-grŭj'* [AS. *be;* F. *gruger,* to grieve: Gr. *grudsein,* to mutter—*lit.,* to mutter in grumbling (see GRUDGE)]: to feel discontent; to grudge; to envy the possession of. BEGRUD'GING, imp. BEGRUDGED', pp. *grŭjd'.*

BEG-SHEHR, *bĕg-shĕ'hĕr:* fresh-water lake of Asia Minor, Karamania; 44 m. s.w. of Koniyeh, presumed to be the ancient *Caralitis.* It is about 20 m. long, and from 5 to 10 m. broad. It contains many islands, and discharges itself by a river of the same name into Lake Soglah. On

its e. and n. shores are the towns of Begshehr and Kereli, the old *Caralio*, which issued imperial coins, and is supposed to have occupied the site of Pamphylia.

BEGTASHI, *bĕg-tâ'shē :* a religious order in the Ottoman empire, which had its origin in the 14th c. The name is believed to be derived from that of a celebrated dervis, Hadji Begtash, to whom the order appears to owe its institution. The members use secret signs and passwords as means of recognition, in the same way as is done by the masonic orders, some of them indeed appearing to be identical with those of Free-masonry. Although numbering many thousand persons of good social position, the society does not appear to exercise any material influence in the religion or politics of Turkey.

BEGUILE, v. *bĕ-gīl'* [AS. *be;* F. *guille,* deceit]: to deceive by juggling tricks; to cheat; to amuse. BEGUI'LING, imp. BEGUILED', pp. *-gīld'*. BEGUI'LINGLY, ad. *-lĭ*. BEGUI'LER, n. one who. BEGUILE'MENT, n. act of deceiving.—SYN. of 'beguile': to deceive; delude; cheat; amuse; ensnare.

BEGUINES, n. plu. *bĕ-gēnz'*, BEGUI'NÆ, or BEGUT'TÆ [F. *béguin,* a linen cap: mid. L. *beghīna*]: the earliest of all lay societies of women united for pious purposes; so named from their linen caps. *Note.*—The name is also said to have arisen from a mere popular nickname, prov. F. *bégui;* F. *béguer,* to stammer; F. *bègue,* a stammerer.—Skeat. The reason of their origin is not quite certain, but it is usually attributed—in part, at least—to the disproportion in the numbers of men and women occasioned by the Crusades. These wars had robbed Christendom of thousands of its most vigorous sons, and left multitudes of widows and maidens, to whom life had henceforth something of a solemn and sorrowful aspect, and who therefore betook themselves, in earnest and affectionate piety, to the charities and duties of religion. The origin of the word is doubtful. The popular tradition of Brabant since the 17th c., that a St. Begga, dau. of Pepin, and sis. of St. Gertrude, founded, 696, the first sisterhood of B. at Namur, has no historical basis. Hallmann has also shown that the supposed oldest document of the B. (1065), giving an account of their establishment at Vilvorde, near Brussels, is unauthentic. The most probable account is, that a priest named Lambert le Bègue, or Le Bèghe, i.e., the Stammerer, about the year 1180, founded, in Liege, a society of pious women, who were called by his name. The B. were not restricted by vows, nor did they follow the rules of any order, but were united under a *supérieure* for the exercise of piety and benevolence, and lived generally in separate small cottages, which, collectively, formed the *Beginagium,* or 'vineyard,' as it was scripturally termed. Their establishments were often enriched by liberal donations. A church, a hospital, and a house of reception or common entertainment, generally belonged to every community of Beguines. The sisters were distinguished from the rest of the laity only by their diligence and devoted-

ness, piety, modesty, and zeal for the purity of youthful education. Societies of B. flourished greatly during the 12th and 13th c., when they spread themselves over France and Germany. Among the most important were those in Hamburg, Lübeck, Regensburg, Magdeburg, Leipsic, Goslar, Rochlitz, and Görlitz. As the pietists of the middle ages, the B. were often subjected to persecution by the mendicant orders of friars; but, on account of their practical usefulness, were sheltered by the pope and councils as well as by secular authorities. In the 13th and 14th c., the B. became united with the persecuted spiritualists among the Franciscans (*Fratricelles*), and with the sect of the 'Brethren and Sisters of the Free Spirit.' Hence arose certain heresies, which occasioned interference by the Inquisition; and on account of certain immoralities, a synod held at Fritzlar required that all candidates must be forty years old before they could enter a society of Beguines. These sisterhoods maintained their position in Germany and the Netherlands longer than in other countries. In Holland, they existed at the close of the 18th c.; and in the present day we find here and there so-called *Beguinen-häuser* (Beguin-houses) in Germany; but they are now nothing more than almshouses for poor spinsters. At Ghent, there is still a celebrated institution of B., numbering as many as 600 sisters, besides 200 *locataires*, or occasional inmates. Their houses form a kind of distinct little town, called the Béguinage, which, though environed by a wall, is open to the visits of strangers. Living here a life of retirement and piety, the B., in their simple dark dresses, go out as nurses to the hospital, and perform other acts of kindness among the poor. As above stated, they are under no monastic vow, but having attached themselves to the sisterhood, it is their boast that none is known to have quitted it. There are houses of B. also at Antwerp, Mechlin, and Bruges; and in 1854, one was established in France, at Castelnaudary, in the department of Aude.

BEGHARDS, *bĕ-gârdz'* [Ger. *begehren*, to seek with importunity]: see BEGHARD. Societies of laymen styling themselves Beghards, first appeared in Germany, the Netherlands, and the s. of France in the beginning of the 13th c., and were known in Italy as *Bizachi* and *Bocasoti;* but they never obtained the reputation enjoyed by the Beguine sisterhood. Towards the end of the 13th c., they were commonly stigmatized as *bons garçons, boni pueri,* 'ministers' men,' 'bedesmen,' 'pietists,' 'vagabonds'—contemptuous titles, which expressed the low estimation in which they were held. On account of heretics of all sorts retreating into these half-spiritual communities, they were subjected to severe persecutions after 1367, and were gradually dispersed, or joined the orders of Dominicans and Franciscans. In the Netherlands, where they had preserved a better character than elsewhere, they maintained their ground longer, and were protected by Pope Innocent IV. (1245), in Brussels by Cardinal Hugo (1254), and in Liege by Pope Urban IV. (1261); but their communities disappeared in the 14th c. —See Mosheim, *De Beghardis et Beguinabus* (Leip., 1790),

and Hallmann's *Geschichte des Ursprungs der Belg. Beghinen* (History of the Origin of Beguines in Belgium), Berlin, 1843.

BEGUM′, v. [*be*, and *gum*]: to cover or smear with gum.

BEGUM, n. *bē′gŭm*, or BEGAUM, n. *bē′gawm*—fem. of BEG: in the *E. Indies*, a princess or lady of high rank.

BEGUN, v.: see under BEGIN.

BEHAIM, *bā′hīm*, MARTIN: about 1459–1506, July 29; b. Nuremberg; famous cosmographer, descended from a Bohemian family which settled in Nuremberg after the middle of the 13th c., and still remains there. He early entered into mercantile life, and went to Venice (1457), and to Mechlin, Antwerp, and Vienna (1477–1479), in pursuit of trade. In 1480, he was induced to go to Portugal, where he soon acquired a reputation as a skilful maker of maps. In 1484–5, he accompanied the Portuguese navigator, Diego Cam, in a voyage of discovery along the w. coast of Africa, and sailed as far as the mouth of the Zaire or Congo river, in lat. 22° s., which was 19½° degrees further than had ever been previously reached. In 1486, B. sailed to Fayal, one of the Azore Islands, where a Flemish colony had settled. Here he married the daughter of Jobst von Küster, gov. of the colony. In 1490, he left Fayal, and returned to his native city, Nuremberg, where he resided, 1491–93. During this stay, he constructed a large globe, principally from the writings of Ptolemy, Pliny, Strabo, Marco Polo, and Sir John Mandeville. It is still preserved by the family of B. in Nuremberg, and is a valuable record of the process of discovery, though it indicates that B.'s geographical knowledge did not at that period extend beyond Japan on the e., and the Cape Verd Islands on the w. After travelling through Flanders and France, B. again resided in Fayal, 1494–1506, and then removed to Lisbon, where he died. The services rendered by B. to geographical discovery and the science of navigation were considerable, though, according to the latest investigations, there is no support for the theory that B. was the discoverer of America, or even that Columbus and Magellan were indebted to B. for guidance with regard to their discoveries. B. left no works except his maps and charts.

BEHALF, n. *bĕ-hâf* [AS. *behefe*, profit; *on healfe*, on the side of: Goth. *halbs*, half]: support; favor; side or cause; defense.

BEHAR: see BAHAR.

BEHAVE, v. *bĕ-hāv′* [AS. *behabben*, to restrain—from *habben*, to have: Ger. *gehaben*, to behave]: to bear or carry one's-self; to conduct; to act; to govern. BEHA′VING, imp. BEHAVED′, pp. *-hāvd′*. BEHAVIOR, n. *bĕ-hāv′yėr*, conduct good or bad; manner of conducting one's-self; propriety of carriage; comportment. BE UPON ONE'S BEHAVIOR, placed in such a condition as requires care and caution. DURING GOOD BEHAVIOR, while conducting one's-self honestly and with propriety.—SYN. of 'behavior': demeanor; conduct; carriage; deportment.

BEHEAD, v. *bĕ-hĕd′* [*be*, and *head:* AS. *beheáfdian*, to behead—from *be*, by; *heáfod*, head]: to cut off the head. BEHEAD′ING, imp.: N. the act of cutting off the head—formerly a common punishment for great crimes. BEHEAD′ED, pp. See CAPITAL PUNISHMENT.

BEHEMOTH, n. *bē′hē-mŏth* [Heb. *behemóth*, beasts, great beast]: the animal described by Job, and supposed to be the hippopotamus or river-horse.

BEHEST, n. *bĕ-hĕst′* [AS. *behæs*, a vow: Icel. *heita*, to be named]: the act of speaking out; command; order; precept.

BEHIND, prep. *bĕ-hīnd′* [AS. *behindan*, afterwards, after: Fin. *hanta*, the tail]: at the tail of; at the back of; after: AD. remaining; at a distance; out of view. BEHIND′-HAND, a. backward; tardy: Ad. in arrears.

BEHISTUN, *bā-hĭs-tôn′*, or BISUTUN [Lat. *Bagistanus;* Persian, *Baghistan*, Place of Gardens]: ruined town of the Persian province of Irak-Ajemi, 21 m. e. of Kirmanshah, lat. 34° 18′ n., long. 47° 30′ e. B. is celebrated for a remarkable mountain, which on one side rises almost perpendicularly to the height of 1,700 ft. and which was in ancient times sacred to Jupiter or to Ormuzd. The rocky side is especially interesting for its cuneiform inscriptions (q. v.), which within recent years have been successfully deciphered by Sir H. Rawlinson. The principal inscription of B., executed by the command of Darius, is on the n. extremity of the rock, at an elevation of 300 ft. from the ground. The inscriptions—which are in the three forms of cuneiform writing, Persian, Babylonian, and Median—set forth the hereditary right of Darius to the throne of Persia, tracing his genealogy, through eight generations, up to Achæmenes; they then enumerate the provinces of his empire, and recount his triumphs over the various rebels who rose against him during the first four years of his reign. The monarch himself is represented on the tablet with a bow in hand, and his foot upon the prostrate figure of a man, while nine rebels, chained together by the neck, stand humbly before him; behind him are two of his own warriors, and above him another figure.

BEHME, *bām*, JACOB: see BÖHME.

BEHN, *bĕn*, AFRA, or APHARA (JOHNSON): English author: 1640-1689; b. Wye, Kent; dau. of a barber. In her youth she spent some time in Surinam, one of whose natives, Oronoko, was the subject of her most notable novel. Returning to England about 1658, she married a merchant of Dutch extraction named Behn, and was presented at court, where her personal appearance and freedom of manners pleased the 'Merry Monarch,' who sent her as a spy to Flanders. Afterward she busied herself with literature. Her numerous plays, poems, tales, letters, etc. (reprinted, 6 vols., London 1871), though witty, are disfigured by impurity of tone; and, in intellectual ability, do not merit the praise given them by Dryden and others.

BEHOLD, v. *bĕ-hōld'* [AS. *be, healdan,* to observe: Dut. *behouden,* to preserve, to keep]: to look steadily upon; to view; to see with attention. BEHOLD'ING, imp. BEHELD', pt. and pp. BEHOLDEN, a. *bĕ-hōld'ĕn,* indebted; obliged. BEHOLD'ER, n. one who. BEHOLD', int. see! lo!—SYN. of 'behold': to view; look; see; contemplate; eye; regard; observe; perceive; scan.

BEHOOVE or BEHOVE, v. *bĕ-hôv'* [AS. *behofian,* to be fit; *behefe,* advantage: Ger. *behuf,* behoof: L. *habĕō;* Dut. *hebben,* to have]: to be fit; to be necessary for; used chiefly in the 3d pers. sing., 'It behoves.' BEHOOVING, imp. *bĕ-hô'vĭng.* BEHOOVED, pp. *bĕ-hôvd'.* BEHOOF, n. *bĕ-hôf,* need; profit; advantage.

BEHRENDS, *bĕr'ĕndz,* ADOLPHUS JULIUS FREDERICK, D. D.: Congl. minister: b. Nymegen, Holland, 1839, Dec. 18.; d. 1900, May 22. His family removed to this country while he was very young. He graduated at Denison Univ., O., 1862, and at the Rochester (Bapt.) Theol. Seminary, N. Y., 1865. In the latter year he became pastor of a Bapt. church at Yonkers, N. Y., and in 1873 was pastor of the first Bapt. Church at Cleveland, O. In 1876 he became pastor of the Union Congl. Church at Providence, R. I., and 1883 of the Central Congl. Church at Brooklyn. He published *Socialism and Christianity* (1886); *Philosophy of Preaching* (1890); *The Old Testament Under Fire; The World for Christ.* He was a forcible writer and very popular as a pulpit orator.

BEHRENS, *bā'rĕns,* BERTHA; popular German novelist, who has written over the signature, W. HEIMBURG: b. Thale, 1850. She completed *Das Eulenhaus,* a posthumous novel by E. Marlitt, whose successor as contributor to *Die Gartenlaube* she became, and among her own novels may be named *Aus dem Leben meiner Alten Freunden* (1878, 8th ed. 1890); *Lumpenmüllers Lieschen* (1879); *Ihr einziger Bruder* (1882); *Waldblumen* (1882); *Dazumel* (1887); *Trudchens Heirat* (1884); *Umfreund Schuld* (1895); *Antons Erben* (1898).

BEHRING: see BERING, VITUS: BERING SEA: etc.

BEIGE, n. *bēzh* [F.]: unbleached serge; a thin woolen fabric used for ladies' dresses.

BEILAN, *bī'lăn:* a pass and town in the n. extremity of Syria, on the e. shore of the Gulf of Iscanderoon. The pass of B. runs from s. w. to n. e., between the mountain-ranges of Rhosus and Amanus, and is the common route from Cicilia into Syria. It is one of the two Amanian passes, supposed to be the lower one, mentioned by Cicero as capable of easy defense, on account of their narrowness. There seems no doubt that, in the war between Darius and Alexander, the B. Pass was an important consideration to both commanders, but historians and geographers appear to be at variance as to the precise advantage taken of it in the struggle.

The town of BEILAN is near the summit-level of the pass, 1,584 ft. above the Mediterranean Sea. It is esteemed for

its salubrity, and its fine water supplied by numerous aqueducts. Pop. about 5,000.

BEILSTEIN, *bīl'stīn*, FREIDRICH KONRAD, Russian Chemist: b. St. Petersburg, 1838. In 1866 he became professor of chemistry in St. Petersburg Institute of Technology. He has published *Anleitung zur qualitaten Chemische Analyse*, which has been widely circulated (1867); *Die Chemische Grossindustrie auf der Weltausstellung in Wien* (1873); and a celebrated *Handbuch der Organischen Chemie* (1800-1901).

BEING, v. *bē'ĭng* [see BE] imp. of *be*: N. existence; a state of existence; a person existing; any living creature.

BEING, in Philosophy: one of the fundamental ideas in philosophy, but one to which no fixed meaning can be attached. For idealism real Being is to be found only in ideas. For materialism it is matter. In short the precise purport of the term is determined by the philosophical system in connection with which it is used.

BEIRA, *bā'ė-râ:* Portuguese province, bounded n. by the provinces of Minho and Tras-os-Montes: s. by Estremadura and Alemtejo; e. by Spain; and w. by the Atlantic ocean: about 9,222 sq. m. The surface is mountainous, and the soil on the plains sandy, and generally far from fertile. The mountain-slopes afford good pasturage for sheep and cattle. The products are corn, wine, oil, flax, and various kinds of fruit, and considerable attention is paid to the rearing of bees. Sea-salt is obtained at the coast. The river Douro waters the whole of its n., and the Tagus a portion of its s., boundary. The Mondego and Vouga flow through its centre. Iron, coal, and marble are wrought in small quantity. Pop. about 1,500,000.

BEIRUT: see BEYROUT.

BEISSEL, *bī'sĕl*, JOHANN CONRAD, German mystic: b. Eberbach, 1690; d. Ephrata, Pa., 1768. He studied theology at Halle, but having been banished in 1720 for his Pietistic opinions he emigrated to Pennsylvania, settling first at Germantown and later in Lancaster County. In 1724 he returned to Germantown and adopted the Dunker faith, but his views as to celibacy and his observance of Saturday as the Sabbath were unacceptable to his neighbors, and he therefore established a sect of Seventh Day Dunkers. He attempted a hermit life, but his fellow believers gathered about him and in 1735 he founded the famous settlement of Ephrata, Pa., and remained at its head till his death. He was the author of the earliest volume of German poetry published in America, *Gottliche Liebes und Lobenstöne* (1730); and published several collections of hymns, such as *The Voice of the Lonely and Forsaken Turtle Dove—that is, of the Christian Church: by a Peaceable Pilgrim traveling to Tranquil Eternity* (1747); and *Paradisiacal Wonder-Play* (1766). In the latter are found the *Brother Song* of the sect with its 215 stanzas, and the *Sister Song*, with 250. He was known at Ephrata as

Friedsam, and on his tomb may be read the inscription: 'Here rests an outgrowth of the love of God, *Friedsam*, a solitary Brother, afterward a leader, ruler, teacher of the Solitary and the Congregation of Christ in and around Ephrata.' See *Chronicon Ephrateuse* (1786); Sachse, *German Sectarians of Pennsylvania* (1899-1900).

BEIT, *bīt*, ALFRED, German colonial financier: b. Hamburg, Germany, 1853; d. London, England, 1906, July 16. He was educated in the schools of his native city, emigrated to South Africa in 1873, and was a diamond merchant in Kimberley 1875–88. He became partner in the banking firm of Werner, Beit & Co. in 1888. On the discovery of gold in the Transvaal he purchased mining lands on an extensive scale, and prior to the Boer war in 1899 was chief partner in mines producing annually $90,000,000 of gold. He was a director of the Rand and Bulfontein mines, of the Rhodesia railways, of the Bechuana Railway Trust, and the Transvaal Consolidated Lands Company. His wealth was estimated at over $100,000,000.

BEIT, *bāt:* an Arabic word, signifying house, abode, or place, the equivalent of which in Hebrew is *Beth*. Thus in Arabic are found *Beit-al-Harâm*, 'the house of the sanctuary,' or 'the sacred house;' and in Hebrew, *Beth-el*, 'house of God;' *Beth-any*, 'place of dates;' *Beth-abara*, 'place of fords,' etc.

BEIT-EL-FAKIH, *bāt-el-fâ'kė* (House of the Saint): town of Tehama, on the Red Sea. Being the frontier town of the Egyptian government, it has considerable trade in coffee, wax, gum, etc., which articles are exchanged for Indian piece goods and British shawls. It has a citadel of some strength. The houses are built partly of mud and partly of brick, and roofed with branches of the date-tree. It is described by travellers as the hottest town in Tehama. Pop. abt. 8,000.

BEITUL'LAH (Arab., House of God): the spacious building or temple at Mecca, which contains the Kaaba: see MECCA and KAABA.

BEJA, *bā'zhâ* (the *Pax Julia* of the ancients): town in the province of Alemtejo, Portugal, 36 m. s.s.w. of Evora. It is fortified, its walls being flanked by 40 towers; has a castle and a cathedral and manufactories of leather and earthenwares. Pop. 6,500.

BEJAPE, v. *bĕ-jāp'* [AS. *be*, about: F. *japper*, to yelp, to yapper: an imitative word]: in *OE.*, to laugh at; to mock; to deceive; to impose upon. BEJA'PING, imp. BEJAPED, pp. *bĕ-jāpt'*.

BEJAPUR, *bė-ja-pôr:* decayed city in the presidency of Bombay, lat. 16° 50′ n., long. 75° 48′ e.; s. e. of Bombay, Poonah, and Satara, at the respective distances of 245, 170, and 130 m.; on an affluent of the Kistna or Krishna, which flows into the Bay of Bengal, and nearly touching the w. border of the Nizam's territories. B. was for centuries the flourishing cap. of a powerful kingdom, falling therewith

under various dynasties in succession, Hindu and Mussulman, till, in 1686, it was captured by Aurungzebe. Thus, stripped of its independence, B. speedily sank into the shadow of a mighty name, passing, during the early part of the 18th c., into the hands of the Mahrattas. On the overthrow of the Peishwa, 1818, it was assigned by the British to the dependent Rajah of Satara; but resumed on the extinction of the reigning family, 1848. Now that a gradual decay has done its worst, B. represents a contrast perhaps unequalled in the world. Lofty walls, of hewn stone, still entire, enclose the silent and desolate fragments of a city which is said to have contained 100,000 dwellings. With the exception of an ancient temple, the sole relic of aboriginal domination, the ruins are Mohammedan, and consist of beautiful mosques, colossal tombs, and a fort of more than 6 m. in circuit, with an inner citadel. An additional wonder of the place is, perhaps, the largest piece of brass ordnance in existence, cast at Ahmednuggur, where the mould may still be seen. Latterly, the Rajah of Satara and the British govt. have done everything to prevent further decay. Pop. abt. 17,000.

BEJAR, *bā-har':* fortified town of Spain, province of Salamanca, abt. 45 m. s. of the cap. of the province. It has cloth manufactures and an annual fair at which is considerable cattle trade. It has warm saline springs, and gives its title to a ducal family who have a palace within its walls. Pop. 12,140.

BEJUMBLE, v. *bĕ-jŭm'bl:* to jumble together.

BEKA, n. *bē'kă* [Heb. *beka*, half-part]: in *Bible*, a half-shekel.

BEKE, *bēk*, Charles Tilstone, ph. d., etc: 1800, Oct. 10—1874, Jul. 31; b. and d. London: modern English traveller. He received a commercial education; studied law in Lincoln's Inn, and turned his attention to ancient history, philology, and ethnography. The results of these studies first appeared in his work, *Origines Biblicæ*, or researches in primeval history, vol. i. (Lond. 1834). His historical and geographical studies of the East led B. to consider the great importance of Abyssinia for intercourse with central Africa. Supported only by private individuals, he joined in Abyssinia the party led by Major Harris, and distinguished himself by the exploration of Godshem and the countries lying to the s. previously almost unknown in Europe. The results of these researches appeared partly in several journals, and in *Abyssinia, a Statement of Facts*, etc. (2d ed. Lond. 1846). Having returned to Europe, he excited the attention of geographers by his publications: the *Essay on the Nile and its Tributaries* (Lond. 1847); *On the Sources of the Nile* (1849); and by his *Mémoire Justificatif en Réhabilitation des Pères Paez et Lobo* (Paris, 1848). In 1861, Dr. and Mrs. B. made a journey to Harran; and undertook in 1865 a fruitless mission to Abyssinia, to obtain the release of the captives. At the commencement of 1874, Dr. B. started for the region at the head of the

Red Sea, where he claimed (though his views are disputed) to have discovered Mount Sinai, e. of the Gulf of Akabah, and not w. as generally supposed. His widow published his *Discovery of Mount Sinai in Arabia, and of Midian* (Lond. 1878).

BEKES, *bā-kĕsh'*, or BEKESVAR': town of Hungary, cap. of the county of the same name: situated at the confluence of the Black and White Körös. It has trade in cattle, corn, and honey. Pop. (1880) 23,938; (1900) 25,087.

BEKKER, *bĕk'kėr*, IMMANUEL: 1785–1871; b. Berlin: German Philologist, distinguished by his recensions of the texts of Greek and Roman classics. He studied in Halle, (1803–07), and was the most eminent pupil of F. A. Wolf. Afterwards he was engaged at Paris on the *Corpus Inscriptionum Græcarum*. The results of his researches in the libraries of Italy (1817–19) appear in his *Anecdota Græca* (3 vols., Berlin, 1814–21), and his numerous recensions of texts derived solely from MSS., and independently of printed editions. The writers included in these recensions are Plato, the Attic orators, Aristotle, Sextus Empiricus, Thucydides, Theognis, Aristophanes, etc. He became prof. at Berlin 1810.

BEKNOW, v. *bĕ-nō'* [*be*, and *know*]: in *OE.*, to acknowledge; to confess.

BEL: see BAAL.

BELA, *bĕl'a*, I., King of Hungary (reigned 1061–63): of the family of Arpad. He energetically suppressed the last attempt to restore heathenism, and by the introduction of a fixed standard of measures, weights, and coinage, virtually founded the commerce of Hungary. He was the first also to introduce the representative system into the diet, by appointing, in lieu of the collective nobility, two nobles only from each of the different counties.

BELA II., King of Hungary, surnamed 'the Blind' (reigned 1131–41). He was entirely under the guidance of his bloodthirsty spouse, Helena, and after her decease, drank himself to death.

BELA III., King of Hungary (reigned 1174–96). Educated in Constantinople, he introduced Byzantine customs and culture into his own country, which was favorable to its social development, though his evident devotion to the Greek emperor Emmanuel threatened its political independence.

BELA IV., King of Hungary (reigned 1235–70): d. 1270: son of that Andreas from whom the nobles extorted the 'Golden Bull,' Hungary's Magna Charta. His chief aim was to humble the nobility, and restore the royal power to its former proportions; and he thus roused a spirit of universal discontent, which led to a party among the nobles calling in the Austrian duke, Frederick II., to their aid; but, in 1236, the duke was conquered by B., and forced to pay tribute. Before long, however, the king had to seek a refuge with his discomfited foe; for the Mongols,

who invaded Hungary 1241, defeated him on the Sajo, and put him to flight. It was only after robbing him of all the treasure he had managed to save, and extorting from him three of his counties, that Frederick II. granted the royal fugitive a shelter in Austria, where he remained till the Mongoſs, having heard of the death of their khan, left the country which they had devastated. B. now made it his especial care, by rebuilding the destroyed villages, and inviting new settlers thither, to do away with the tokens of that terrible invasion; and he so far succeeded as to be able, 1246, to repay Frederick's inhospitality by defeating him at Vienna, and to repulse a second attempt at Mongolian invasion. His last years were embittered by an attempt at rebellion by his son Stephen.

BELABOR, v. *bĕ-lā'bėr* [AS. *be;* L. *labor*, toil, exertion]: to beat soundly; to thump. BELA'BORING, imp. BELA'-BORED, pp. *-bėrd.*

BELAMOUR, n. *bĕl'â-môr'* [F. *bel*, fair; *amour*, love]: in *OE.*, a fair lover; a gallant; a paramour; a consort. BELAMY, n. *bĕl'ă-mĭ* [F. *bel*, fair; *ami*, friend]: in *OE.*, a good friend; a fair friend; an intimate.

BELAS'CO, DAVID, American dramatist: b. San Francisco, 1859, July 25. He appeared on the stage in 1874, but soon forsook it for play writing. Alone and in collaboration he is the author of such popular plays as *Lord Chumley; The Wife; The Charity Ball; The Girl I Left Behind Me; The Heart of Maryland; Zaza; May Blossom; Men and Women; La Belle Russe; Valérie; Du Barry; Hearts of Oak; Naughty Anthony; The Darling of the Gods; Sweet Kitty Bellairs; Adrea; The Girl of the Golden West;* etc.

BELATE, v. *bĕ-lāt'* [AS. *be;* L. *lātus*, carried: or simply *be*, and *late*]: to make a person too late. BELAT'ING, imp. BELA'TED, pp.: ADJ. too late; benighted. BELA'TEDNESS, n. *-nĕs*, state of being belated.

BELAUD, v. *bĕ-lawd'* [*be*, and *laud*]: to praise greatly.

BELAY, v. *bĕ-lā'* [Dut. *beleggen*, to lay around]: to block up; among *seamen*, to lay the cable round the bits; to fasten, as a rope. BELAY'ING, imp. BELAYED, pp. *bĕ-lād'*. BELAY'ING-PINS, the wooden pins on which the ropes are belayed or wound; usually of ash 12–16 inches long.

BELCH, v. *bĕlsh* [AS. *bealcan*; Dut. and Low Ger. *bolken* or *bulken*, to bellow]: to throw up anything violently, as wind from the stomach, or matter from a volcano: N. the act of throwing up or out; eructation. BELCH'ING, imp. BELCHED, pp. *bĕlsht.*

BELCHER, *bĕl'chėr*, Sir EDWARD: 1799–1877, Mar. 18: distinguished English naval officer. He entered the navy, 1812, as a first-class volunteer, was soon made a midshipman, and in 1816 took part in the bombardment of Algiers. In 1825, B. was appointed asst. to the expedition about to explore Behring's Strait under Captain Beechey; in 1829, he was raised to the rank of commander. In 1836, he was in command of the *Sulphur*, commissioned to ex-

plore the w. coasts of America and the Indies. He was absent six years, in which time he had sailed round the world. During his voyage he rendered important services in the Canton river to Lord Gough, whose successes over the Chinese were greatly due to B.'s soundings and reconnaissances pushed into the interior. On his return, he published a narrative of the voyage; and in 1843, in consideration of his services, he was made a post-captain, and knighted. After being employed on surveying service in the East Indies, he was, 1852, appointed to the command of the expedition sent out by government to search for Sir John Franklin. B. published *The Last of the Arctic Voyages* (Lond. 1855); *Narrative of a Voyage to the East Indies in* 1843–1848; and other works. In 1861 he became rear-admiral of the red, 1866 vice-admiral, 1867 K. C. B., and rear-admiral 1872.

BELCHER, Jonathan, colonial governor of Massachusetts: b. Cambridge, Mass., 1681, Jan. 8; d. Elizabethtown, N. J., 1757, Aug. 31. He was graduated at Harvard, in 1699, and spent six years in Europe before returning to Boston, as a merchant. From 1730 to 1741 he was governor of Massachusetts and New Hampshire. In 1747 he was made governor of New Jersey and gave it a successful administration. He enlarged the charter of the College of New Jersey (Princeton) and gave that institution, among other benefactions, his own valuable library. *The Belcher Papers* were issued by the Massachusetts Historical Society, 1893.

BELCHER, Thomas Waugh, Anglican clergyman: b. Bandon, Ireland, 1831. He was educated at Trinity College, Dublin, and in the medical schools of Paris and Vienna and subsequently took orders in the Established Church. He has published *Our Lord's Miracles of Healing Considered in Relation to Some Modern Objections and to Medical Science* (1872); *Hygienic Aspects of Pogonotrophy* (1864); *Reformation for Drunkards* (1862); *Is Christ the Head of His Church in England* (1881); *Apostolic Contumacy; Life of Robert Brett* (1889). He has been rector of Frampton-Cotterell, Bristol, from 1886.

BELEAGUER, v. *bĕ-lē'gėr* [Dut. *belegeren*, to besiege: AS. *be;* Ger. *belagern*, to besiege—from *lager*, a camp]: to besiege; to surround a place with an army so as to prevent any one escaping from it. Belea'guering, imp. Beleaguered, pp. *bĕ-lē'gėrd.*—Syn. of 'beleaguer': to besiege; encompass; block up; invest; environ.

BELEM, *bā-lĕng':* town of Portugal, on the right bank of the Tagus, 2 m. s.w. of Lisbon, of which it may be said to be a fashionable suburb. It has an iron foundry, a custom-house, and quarantine establishment. It is historically interesting as the place whence Vasco da Gama set sail on his voyage of oriental discovery. It was taken 1807, Nov., by the French, the royal family of Portugal embarking from its quay for Brazil as they entered. In 1833 it was occupied by Dom Pedro's troops. Pop 5,000.

BELEM', or PARA, *pâ-râ':* city of Brazil, on the right bank of the Para, the most southerly arm of the estuary of the Amazon. See PARA.

BELEMNITE, n. *běl'ĕm-nīt* [Gr. *belemni'tēs*, a kind of stone—from *bel'emnon*, a dart]: interesting genus of fossil cephalopodous *Mollusca*, type of a family called *Belemnitidæ*, to the whole of which the name B. is generally extended, closely allied to the *Sepiadæ*, or Cuttle (q.v.) family. No recent species of B. is known: fossil species are very numerous, and are found in all the oolitic and cretaceous strata from the lowest lias to the upper chalk, some of which are filled with myriads of their remains. These remains are generally of the shell alone, which is now known to have been an internal shell, entirely included within the body of the animal, like that of the cuttle. The shell, as seen in the

Belemnites pistiliformis.

most perfect specimens, is double, consisting of a conical chambered portion (the *phragmocone*), inserted into a longer, solid, somewhat conical or tapering, and pointed sheath. The space between the phragmocone and sheath is occupied either with radiating fibres or conical layers. The chambers of the shell are connected by a tube (*siphuncle*), so that the animal probably had the power of ascending and descending rapidly in the water. Its arms are known, from some singularly perfect specimens, to have been furnished with horny hooks; and these it probably fixed upon a fish, and descended with its prey to the bottom, like the hooked Calamary (q.v.) of the present seas. Remains of an ink-bag, like that of the cuttle, have been found in the last and largest chambers of the B.; but remains of this chamber, which must have contained all the viscera of the animal, are very rarely preserved, the shell having been very thin at this part. The part most commonly found, and generally known by the name of belemnite, is the solid *mucro*, or point into which the sheath was prolonged behind the chambered shell. These have received such popular names as Arrowheads, Petrified Fingers, Spectre-candles, Picks, Thunder-stones, etc., from their form, or from the notions entertained of their nature and origin. Belemnites appear to have been of very different sizes; in some of the largest, the mere *mucro* is 10 inches long, and the entire animal, with its arms outstretched, must have been several feet in length. BELEMNITIDÆ, n. plu. *běl'ĕm nĭt-ĭ-dē* [Gr. *eidos*, resemblance]: extinct group of dibranchiate, shell-less cephalopods, comprising the belemnites and their allies.

BEL-ESPRIT, n. *běl-es-prē'* [F. *bel*, fine; *esprit*, spirit]: a fine spirit; a man of wit.

BELFAST, *běl'fast:* a seaport, seat of justice of Waldo co., Me., on Penobscot Bay, about 30 m. from the sea. It

is the terminus of one division of the Maine Central railroad, and is by that road 130 miles n.e. of Portland. Resting on the slope of a hill, it commands a magnificent view over a wide expanse of water. It has an excellent harbor, deep enough for the largest ships. A large portion of the inhabitants are engaged in trade, ship-building, and navigation. It has the court-house, half a dozen churches, several weekly newspapers, a high school, two banks, and very many manufactories of different kinds. Incorporated 1853. Pop. 4,700.

BELFAST, *bĕl-făst′:* chief town of the county of Antrim, and province of Ulster, Ireland. This great seaport stands at the embouchure of the Lagan, at the head of Belfast Lough, 12 m. from the Irish Sea, 101 n. of Dublin, 36 n. e. of Armagh, 130 s. w. of Glasgow, and 150 n. w. of Liverpool. The site is chiefly on an alluvial deposit not more than 6 ft. above the sea-level, reclaimed from the marshes of the Lagan. On the land-side, it is picturesquely bounded by the ridges of Divis (1,567 ft. high), and Cave Hill (1,185 ft.). The general aspect of B. is indicative of life and prosperity, exhibiting the trade and manufacture of Glasgow and Manchester, with far less than their smoke and dirt. Many streets, especially in the White Linen Hall quarter, are well built and spacious. The mercantile quarter lies chiefly near the extensive and well-built quays. The manufactories are mostly on the rising ground on the n. and w. of the town. Numerous villas sprinkle the n. shores of the bay, as well as the elevated suburb of Malone to the s. Of the churches of B., above 30 are Presb., about 20 Episc., 15 Meth., and 8 Rom. Cath. Queen's College was opened 1849. The Presb. College had the power of granting degrees in theology conferred on it 1881. The Royal Academical Institution and the Government School of Art also are important. There are numerous hospitals and banks. The Customs, Inland Revenue, and Post-office have large buildings, and the Town-hall is extensive. The Botanic Gardens occupy 17 acres. B. is the chief seat of the trade and manufactures of Ireland, and is second only to Dublin as an Irish port. The staple manufactures are linen and cotton. The linen manufacture dates from 1637. Cotton-spinning by machinery dates from 1777, linen from 1806. The other chief branches of industry are linen and cotton-weaving, bleaching, dyeing, calico-printing, and iron founding. There are many flour and oil mills, chemical works, breweries, alabaster and barilla-mills, saw-mills, shipbuilding, rope, and sail-cloth yards. The iron-shipbuilding yard on Queen's Island employs more than 2,000 hands. The inland trade is carried on by the Lagan, the Ulster canal, and three railways. The harbor has undergone extensive improvements, adding 25 acres of area to the dock accommodation, and a mile of quayage, making B. one of the first-class ports of the United Kingdom. The town has an unhappy notoriety for riots between Orangemen and Rom. Catholics, such as that of 1880, July. B. is governed by a Corporation of 10 aldermen—

one being mayor—and thirty councilors. Since 1885, it returns 4 members to parliament. B. was destroyed by Edward Bruce in the 14th c., but became an important town since 1604, receiving a charter 1611. In the great civil war, the inhabitants at first joined the parliament, but afterward became royalists. Pop. (1821) 37,000; (1851) 103,000; (1871) 174,412; (1881) 208,122; (1891) 255,950; (1908) 380,344.

BELFORT, or BÉFORT, *bā-fōr′:* town in France, cap. of the French remnant of the dept. of Haut-Rhin. From 1870 till 1879 this remnant (234 sq. m.), taking its name from the town, was called the *Territoire de B.*, and consisted of those portions of Haut-Rhin which, seized by Germans during the war of 1870–1, were restored to France by the preliminaries of peace arranged at Versailles, 1871, Feb. 26. The strategical importance of B. was recognized by France on its cession by Austria, 1648, and it was fortified by Vauban. At the outbreak of the war between France and Germany, 1870, B. was a fortress of the first rank; and as such maintained, from 1870, Dec. 3, till 1871, Feb. 16, a gallant defense against the German troops. It then capitulated, the defenders being permitted to march out with all the honors of war. B. was besieged also by the allies, 1814. It has a brisk trade. Pop. (1901) 32,567; of territory, nearly 100,000.

BELFRY, n. *bĕl′frĭ* [F. *beffroi*, a watch-tower—from OF. *berfroi*—from M. H. G. *bercfrit*, a watch-tower: mid L. *belfrēdus*]: *formerly* a tower for warlike purposes, either of offense or defense; *now* used only for the part of a steeple or building where a bell is hung—*belfry*, so named from its resemblance to such a tower; a bell-tower or turret, usually forming part of a church or other building, but sometimes detached from it—as at Evesham and Berkeley, England, and more frequently in Italy See CAMPANILE. Where a church was built in a deep glen, the belfry was perched on a neighboring height, as at St. Feve and elsewhere in Cornwall, and at Ardclach and Auldbar in Scotland. At this last place, the bell was hung upon a tree, as was common in Scotland at the close of the 17th c. Where the B. consists of a mere turret, it is often called a *bell-gable* or *bell-cote*, and is placed on the w. end of the church; a smaller one being sometimes placed at the e. end, which is for the sanctus bell, for which reason it is placed over the altar. When the burghs began to rise into importance after the 12th c., they asserted their right to have bells to call the burghers together for council or for action. Thus detached belfries arose in the heart of towns. At a later date they often became part of the *maison de ville*, or town-house, as at Glasgow and Aberdeen, Scotland; at St Quentin and Douai, France; and at Brussels, Belgium.

BELGÆ, *bĕl′jē:* name given by Cæsar to the warlike tribes which in his time occupied that one of the great divisions of Gallia which comprised part of the basin of the Seine, the basin of the Somme, of the Scheldt, of the Maas, and of the Moselle, which itself belongs to the basin of the

Rhine. When Britain was invaded by Cæsar, he found that B. from the opposite shores of Gaul had preceded him, and were settled in Kent and Sussex, having driven the aborigines into the interior. The B. in Britain resisted for nearly a century the Roman power, but were finally forced to yield to it. Cæsar regarded them as German, but they seem to have belonged rather to the Celtic portion of the Gallic Belgæ. Certainly, none of the names of their three chief towns are Germanic. Aquæ Solis (Bath) is Latin; Ischalis and Venta (Ilchester and Winchester), British.

BELGARD, n. *běl-gârd'* [F. *bel*, fair; *égard*, regard, respect]: in *OE.*, a kind regard; a sweet or soft glance.

BELGAUM, *běl-gawm':* chief city of a dist. of the same name in the presidency of Bombay; one of the principal military stations of the presidency; east of the dividing ridge of the West Ghauts, about 2,500 feet above the sea. Its lat. is 15° 50′ n., and long. 74° 36′ e., its distance to the n. w. of Dharwar being 42 m. B. has a fort, which, 1818, was taken from the Peishwa by the British. Under its new masters, the place has made considerable progress. It has a superior institution for the education of native youths, supported at once by the neighboring princes, the British government, and private individuals. The average annual rainfall at B. is about 36 inches. In 1848, the citizens spontaneously suscribed a considerable sum for the complete reconstruction of their roads and lanes—a liberality which, besides drawing forth a supplementary grant of public money, roused the emulation of adjacent towns and villages. Pop. 40,737. The district of BELGAUM has 4,656 sq. m.; pop. 1,013,261.

BELGIOJOSO, CHRISTINA TRIVULZIO, Princess of 1808–71; b. Milan; daughter of the Marquis Jerome-Isodore of Trivulzio, distinguished in the military annals of France and of Italy. She was an author and a brilliant figure in society. The princess married (1824) Prince Emilius of Barbian and Belgiojoso, and went to live in Paris, not venturing to establish herself at Milan, then under the dominion of Austria. In 1848 she hastened to Italy, then for a short time free from the foreign yoke, and raised at her own expense a corps of volunteers; but the victories of Radetsky constrained her once more to expatriate herself, and her property was sequestrated. She afterwards made a tour through Asia Minor, and, without abandoning any of her liberal views, freely rallied, like most Italian republicans of 1848, to the popular government of Victor Emanuel. The Princess of B. has published a number of works, which have given her good rank as a writer. Among them, are: *Essay on the Formation of the Catholic Dogma* (1846, 4 vols.); *Reminiscences of Exile* (1850); *Asia Minor and Syria, Recollections of Travels* (Paris, 1858, 8vo); *Scenes from Turkish Life* (Paris, 1858, 12mo); *History of the House of Savoy* (1860); *Reflections on the Present State of Italy and on Its Future* (1869).

BELGIUM, *bĕl'jē-ŭm:* one of the smaller European states, consisting of the southern portion of the former kingdom of the Netherlands (as created by the Congress of Vienna). B. is the most densely populated country in Europe, 539 to the sq. m., and in Brabant over 900.

Geography and Statistics.—Belgium lies between lat. 49° 30′ and 51° 30′ n., long. 2° 33′ and 6° 6′ e.; between France and Holland, the North Sea and Prussia. Its greatest length from n.w. to s.e. is 173 English m.; its greatest breadth from n. to s., 112 English m.; 11,373 sq. m. The pop. by census of 1900 was:

Provinces.	Area, sq. miles.	Pop.
Antwerp (Anvers)	1,093	819,159
Brabant	1,268	1,263,535
Flanders { West	1,249	805,236
Flanders { East	1,158	1,029,971
Hainaut	1,437	1,142,954
Liége	1,117	826,175
Limbourg	931	240,796
Luxembourg	1,706	219,219
Namur	1,414	346,512
Total	11,373	6,693,548

Principal Cities and Towns, 1900.

Cities and Towns.	Pop.	Cities and Towns.	Pop.
Brussels (including suburbs)	562,893	Seraing	38,468
Antwerp	278,093	Tournai	35,327
Liége	160,246	Courtrai	33,495
Ghent	162,291	Namur	31,610
Mechlin	56,509	Ostend	40,575
Verviers	49,353	St. Nicholas	31,603
Bruges	53,083	Alost	29,723
Louvain	42,824	Mons	26,989
		Charleroi	25,112

Physical Aspect.—B. is, on the whole, a level and even low-lying country; diversified, however, by hilly districts. In the s.e., a western branch of the Ardennes highlands makes its appearance, separating the basin of the Maas from that of the Moselle, but attains only the moderate elevation of 2,000 ft. In Flanders the land is so low, that in parts where the natural protection afforded by the downs is deficient, dikes, etc., have been raised to check the encroachments of the sea. In the n.e. part of Antwerp, a naturally unfertile district named the Campine, and composed of marshes and barren heaths, extends in a line parallel with the coast. The once impassable morasses of the *Morini* and the *Menapii,* which stayed the progress of Cæsar's legions, are now drained, and converted into fertile fields, surrounded by dense plantations, which make the land at a distance look like a vast green forest.

Hydrography, Climate, Agriculture, etc.—The abundant water-system of B. is chiefly supplied by the rivers Scheldt and Maas, both of which rise in France, and have their embouchures in Holland. At Antwerp, the Scheldt, which, like the Maas, is navigable all through Belgium, is 32 ft. deep, and about 480 yards wide. Its tributaries are the Lys, Dender, and Rupel. The Maas, or Meuse, re-

ceives in its course the waters of the Sambre, the Ourthe, and the Roer. These natural hydrographical advantages are increased by a system of canals which unite Brussels and Louvain with the Rupel, Brussels with Charleroi, Mons with Condé, Ostend with Bruges and Ghent, and this last place with Terneuse. According to the resolution passed by the government, 1842, the long postponed project of cutting canals through the Campine district was commenced, and has been very advantageous to agriculture. A large portion of the Campine seems destined to perpetual barrenness—a dreary, silent, irreclaimable waste; but wherever it has been possible to rescue a patch from the stubborn heath or the relentless sand, there agricultural colonies have been planted, and cornfields shine, and pastures brighten the heart of the immemorial wilderness. The climate of B., in the plains near the sea, is cool, humid, and somewhat unhealthful; but in the higher s.e. districts, hot summers alternate with very cold winters. April and November are always rainy. These varieties of climate are favorable to a greater variety of produce than the neighboring country of Holland can supply. The Ardennes districts yield a large supply of wood; while the level provinces raise all kinds of grain—wheat, rye, barley, oats, etc., leguminous plants, hemp, flax, colza, tobacco, hops, dye-plants, and chicory. Belgium contains nearly 7,276,000 acres, of which almost one-third is in corn crops, rather more than one-eighth is meadow and pasture, one-sixth is woods and forests, and less than 600,000 acres are waste or water. Some hundreds of acres are devoted to vineyards, but the wine produced is inferior. The forests of Ardennes abound in game and other wild animals. Good pasturage is found on the slopes and in the valleys of the hilly districts, and in the rich meadows of the low provinces. Gardening occupies not less than 130,000 acres; indeed, it has been said that the agriculture of B. is gardening on a large scale, so carefully and laboriously is every inch of soil cultivated. The spade is still the principal instrument used. In the Campine the care of bees is very productive, and the cultivation of the silk-worm is encouraged. The coast fisheries employ several hundred boats. The breeding of horses is an important industry, for which B. is famous. A large number of horned cattle and sheep are also bred.

Geology.—The geological formations of B. are closely associated with those of France and Britain. The greater portion of the country is covered with *Tertiary deposits.* A line drawn across the course of the Scheldt, by Mechlin, along the Demer and Maas, will have on its n. and n. w. aspect a track of tertiary deposits, bounded n. by the sea. In these tertiary strata the different geological periods are fully represented; but only the second, containing the Pleiocene deposits, is rich in fossils. The *Secondary deposits* occupy an extensive tract in the centre of Belgium, between the Scheldt and the Demer. The most important

district, economically, is the s. w., consisting of *Palæozoic rocks*—Silurian, Devonian, and Carboniferous. These beds have a very complicated structure, from the numerous and extensive flexures and folds that they have undergone, and these are often accompanied with great upward shifts, by which beds of many different ages are brought to the same level.

Mineral Products.—B. is rich in minerals, which, next to its abundant agriculture, constitute the chief source of its national prosperity. The four provinces in which they are found are Hainault, Namur, Liege, and Luxembourg. They include lead, copper, zinc, calamine, alum, peat, marble, limestone, slate, iron, and coal. Lead is wrought, but only to a small extent, in Liege; copper in Hainault and Liege; manganese in Liege and Namur; black marble at Dinant; slates at Herbemont; and calamine principally at Liege. But these products are insignificant compared to the superabundance of coal—from anthracite to the richest gas coal—and iron, in which B. ranks next to England. In 1901 B. had 219 coal mines open, employing 132,749 persons, and producing 23,463,000 tons, value $81,694,000. In the same year the metallic mines produced over 200,000 tons of iron ore, 2,500 of pyrites, 18,000 of calamine, 2,000 of blende, 3,000 of sulphuret of lead, and 450 of manganese. These mines employed over 1,400 workmen. There were 17 pig-iron, 38 blast furnaces, 47 iron, and 18 steel plants in operation; 121 sugar manufactories, and 270 distilleries.

The modern industrial character of the Belgians may be traced back to a very early period, even to the time of the Romans, who noticed the love of traffic prevailing in the Celtic districts of *Gallia Belgica*. This characteristic has remained steadfast. It is impossible not to recognize in the cloth-weaving *Atrebatæ* the ancestors of the industrious race who gradually extended themselves to the e. and n. of Belgium. During the early commerce of Europe, when trade was secure only within walled towns, Flanders was the principal seat of productive industry; and its recent separation from Holland has been indirectly favorable to the development of its internal resources. A state which, like B., begins its career under a burden of debt, which is shut in between nations that possess important ports and colonies, and which is peopled by races not yet sufficiently blended to constitute a perfect nationality, must, before all other things, develop its internal, material resources. This has been well understood in Belgium. Since the commencement of its independent career, it has devoted is attention almost exclusively to those branches of industry and commerce by which its future greatness must be supported.

Manufactures.—The chief manufactures are linen, woolen, cotton, silk, lace, leather, and metals. The great seats of the linen manufacture—recently revived after a long depression—are Courtray and Bruges, in West Flanders; Ghent, in East Flanders; Brussels, in Brabant; Mech-

SWITZERLAND
SCALE OF MILES
0 10 20 30 40
GERMANY
AUSTRIA-HUNGARY
Lake of Constance
Basle
Zurich
Lucerne
BERNE
Geneva
Lake of Geneva
Lago Maggiore
Lago di Como
Lago d'Iseo
Longitude 8° East from 9° Greenwich

SKAGERRACK
The Skaw
Gothenborg
Frederikshavn
LESSÖ
Aalborg
CATTEGAT
VANHOLT
JUTLAND
Aarhuus
Skanderborg
Frederiksborg
Frederikssund
COPENHAGEN
SJÆLLAND
Odense
FYEN
Korsör
Nestved
Rödvig
Hylleholt
Kallehave
Stege
MÖEN
FALSTER
Nykjöbing
LAALAND
Rödbe
Gjedser Odde
FEHMERN
Kiel Bay
Kiel
Oldenburg
Neustadt Bay
Rostock
Lübeck
Altona
Hamburg
Bremerhaven
Lauenburg
DENMARK
SCALE OF MILES
0 10 20 40 60
Longitude

HOLLAND AND BELGIUM
SCALE OF MILES
0 10 20 40 60
FRIESIAN ISLANDS
NORTH SEA
TEXEL
Helder
Harlingen
Leeuwarden
Groningen
Assen
Hoorn
ZUIDER ZEE
Kampen
Zwolle
Coevorden
Zaandam
Haarlem
AMSTERDAM
Almelo
Leyden
HAGUE
Utrecht
Deventer
HOLLAND
Amersfoort
Arnhem
Zutfen
Delft
Gouda
Rotterdam
Dordrecht
Zierikzee
Bois-le-Duc
Tilburg
Middelburg
Flushing
Heyst
Breda
Eindhoven
Venlo
Bergen
Turnhout
Antwerp
Ostende
Nieuport
Ghent
Lierre
Creeld
Düsseldorf
BELGIUM
Ypres
Courtrai
Alost
Malines
Louvain
Hasselt
Maastricht
Oudenarde
Tirlemont
Tongres
BRUSSELS
Roubaix
Lille
Tournai
Nivelles
Namur
Liege
Verviers
Douai
Mons
Huy
Charleroi
Valenciennes
Dinant
Cambrai
Bastogne
Diekirch
FRANCE
Neufchateau
Arlon
LUXEMBURG
Sedan
Rheims

lin, or Malines, in Antwerp; and Tournay, in Hainault. The lawn and damask fabrics of Bruges are celebrated, as well as the lace made in and near Brussels, Malines, Louvain, and Bruges, which sometimes commands a price of $200 per yard. But the Belgian hand-spun yarn, though superior in quality, cannot maintain its ground against machine-made. Verviers, Liege, Dolhaim, Ypres, Doperinghe, Limbourg, Bruges, Mons, Thuin, and Hodimont are centres of the woolen manufacture. Ypres alone employs 50,000 workmen in this branch of industry. Brussels and Tournay have large carpet manufactures, and Hainault supplies considerable hosiery. The principal manufactures of cotton are at Ghent and Lokeren, in East Flanders; Bruges and Courtray, in West Flanders; Malines Louvain, and Anderlecht, in Brabant; Tournay and Mons, in Hainault; and also at Antwerp. The separation of B. from Holland had at first a prejudicial effect on this as on other trades; but the opening of the navigation of the Scheldt, the intersection of the country by railways and canals, and, in consequence, the rapid and extensive communication with other countries, have revived the activity of the cotton trade, which now gives employment to between one and two hundred thousand workmen. Maestricht, which belongs to Holland, is one of the chief seats of manufactures of leather; but this trade is carried on also at Limbourg, Liege, Stadelot, Namur, Dinant, and especially at Bruges and Ghent. The manufacture of gloves has made great progress in recent years. Metallurgy also has rapidly increased in productiveness since 1816, when Cockerill introduced into B. the English method of smelting iron with coke. The principal seats of the metal manufacture are Liege, Namur, Charleroi, Muns, and their neighborhoods. There are large ordnance foundries at Liege and Malines, and celebrated makers of firearms and machinery in Liege; nail-making at Charleroi; tinware, etc., at Liege and in Hainault; wire and brass factories at Namur; zinc manufactures at Liege; lead and shot factories at Ghent; the gold and silver goods of Brussels and Ghent may also be noticed as important branches of Belgian industry. Flax is one of the most extensive and valuable products of B., no fewer than 400,000 persons being employed in its culture and preparation. Besides these, there are the straw-bonnet manufacture in the neighborhood of Liege; the paper fabrics of the provinces Liege, Namur, and Brabant; the glassworks of Hainault, Namur, Val-St.-Lambert, and Brabrant; the porcelain, etc., of Tournay, Brussels, Mons, and Ghent; and sugar-refineries at Antwerp, Bruges, Ostend, Ghent, etc. Steam-engines have been common in the several manufactories of B. for many years.

The natural wealth and industrial resources of B. have always been modified by the political relations of the country. In the middle of the 13th c., B., with Bruges as its chief seat of manufactures, had surpassed all its neighbors in industry, and had established a flourishing

commerce with the Italians. After the discovery of America, Antwerp took the place of Bruges, and was regarded as a northern Venice. But the unhappy period of Spanish oppression and the war in the Netherlands deeply depressed Belgium commerce, which suffered still more at the peace of Westphalia, when Holland monopolized the navigation of the Scheldt. The river was again opened at the close of the 18 c., when the French had invaded the Netherlands, and Napoleon caused the harbor of Antwerp to be restored and enlarged. At the cost of Amsterdam, Belgian commerce received a new impulse by the union of B. with Holland, as settled by the Congress of Vienna; but scarcely were hopes revived, when the revolution of 1830 changed the prospects of the country. The treaty signed in London, 1839, Apr. 19, gave to Holland the right to levy a toll of two shillings and sixpence per ton on all vessels navigating the Scheldt. The privilege of navigation on the inland waters between the Scheldt and the Rhine was purchased by B. for an annual payment of $250,000. In 1839, June, this privilege was virtually taken away by the government of Holland, and in 1843, with additional expense to B., the new treaty of navigation was ratified by both parties. During this crisis preceding the development of a free commerce, B. had not neglected her internal resources. The Société de Commerce de Bruxelles, the Banque de Belgique, and other associations for the extension of trade, had been formed; and 1834, May 1, the government adopted the scheme for a railway-system, the most complete of any on the continent. The centre of the Belgian network of railways is Malines, whence lines are carried out in all directions. The n. line goes to Antwerp and its harbor; the w., by Ghent and Bruges, to Ostend; the s. w., by Brussels and Mons, to Quievrain and the borders of France, not far from Valenciennes; and the e. by Louvain, Tirlemont, Liege, Verviers, and extending to the confines of Prussia. In 1905 there were 4,375 miles of railway in the country. The working of the post-office in B. was in 1904 as follows: Private letters, 155,996,778; printed papers 173,535,247; post cards, 87,849,762; newspapers, 138,342,249. In 1905 there were in that country 1,330 post-offices; 1,438 telegraph stations; the total length of telegraph lines was 4,117 m., the length of wire 23 079 m. The importations and exportations (1905) aggregated $1,032,042,000. The trade with the United States in 1906 was as follows: Importations to B., $50,021,107; exportations from B., $28,411,318. The annual declared value of exports from the district of Brussels to the United States is about $3,000,000. The debt of Belgium (1906) was $621,640,286. In 1906 the revenues were $107,860,738; and the expenditures $109,366,961. There were 2,311,845 depositors in postal and other savings banks and the deposits aggregated $151,640,983.

In 1903 Belgium had 218 coal mines, employing 139,592 persons and producing 23,797,000 tons; metallic mines

produced in 1900 247,890 tons of iron ore and employed (1903) 682 men. There were (1903) 1,645 quarries, employing 37,117 workmen. The manufacture of iron (1903) engaged 44 active works and 343 puddling furnaces, employing 12,440 men; the combined tonnage of pig and manufactured iron, steel ingots, and rails aggregated 3,491,920 tons, valued at $64,353,000.

The intellectual improvement of B. has not kept equal pace with its material prosperity. The lack of political independence, which has forced the best energies of the country into foreign centres of activity, and the variety and confused mixture of dialects, have retarded the growth of the national intellect, and the formation of national individuality. An independent national literature, acting as the bond of a pure national unanimity, was not possible under such unfavorable conditions, to which may be added the facilities afforded for supplying the people with cheap reprints of foreign works. The Flemish element—the most important—seems indeed to have become conscious of its capabilities in respect to literature; but a genuine expression of the entire Belgian mind will become possible only when the Walloon element also begins to develop a freer form of speech with its own peculiar modes of thought. The Royal Acad. of Arts and Sciences at Brussels is at the head of several other unions for scientific purposes. Among the most celebrated names in Belgian literature and science are —Quetelet in mathematics, Altmeyer the historian, Fetis the musical critic, Conscience the Flemish poet and novelist, Maeterlinck the poet, and Baron and Moke in literary history and criticism. Painting and architecture formerly flourished in the wealthy old towns of Flanders; but after the brilliant epoch of Rubens and his pupils, a long period of dullness followed. In modern times, a revival of art has taken place, as shown by the names of the painters, Wappers, De Keyser, Gallait, De Biefve, Verboekhoven, etc.; the sculptors, W. Geefs, Simonis, Jehotte, Fraikin, etc.; the engravers, Calamatta, Brown, and Meunier; and the medallists, Wiener and Hars.

The Belgian school-system suffered for more than ten years under the freedom of teaching allowed by the constitution, which was made use of chiefly by the wealthy Rom. Cath. clergy. The consequence was that education assumed a divided and sectarian character. Since the state, however, has exercised a general superintendence over the universities, gymnasia, and elementary schools, a higher style of education has prevailed. The two universities of Ghent and Liege, united with a school of architecture and mining; ten national schools (*Athénées*), in which a classical is combined with a commercial education; upwards of 50 schools preparatory to these (*Ecoles moyennes*); two seminaries for teachers at Lierre and Nivelle, besides the superintendence now exercised by the state over the institutions formerly maintained by communes and provincial corporations, and, above all, over the primary schools—all this forms a sufficient counterpoise to the numerous schools supported by

private individuals and religious bodies; among the latter may be noticed the Catholic Univ., of Louvain, founded 1836, and conducted under strict ecclesiastical discipline; the free Univ. of Brussels; and the gymnasia of the Jesuits at Namur, Brugelette, Brussels, and Liege. Journalism in B. has been greatly extended by the abolition of the stamp duty (1848), and almost 1,000 newspapers are now published, including nearly 100 daily papers; but only a few have obtained a proper degree of respectability and influence.

Population and Religion.—The population of B. is of mixed German and Celtic origin. The Flemmings (of Teutonic stock) and Walloons (Celtic in origin), distinguished by their peculiar dialects (see FLEMISH LANGUAGE: WALLOONS), are still conspicuous among the pure Germans, Dutch and French. The French language has gained the ascendency in educated society and in the offices of government; but the Flemish dialect prevails numerically in the proportion of 9 to 8. The *Rom. Catholic religion* is the prevailing form. There are only about 14,000 or 15,000 Protestants and 3,000 Jews. The supreme Rom. Cath. dignitaries of B. are the Abp. of Mechlin, and the five diocesan bishops of Bruges, Ghent, Tournay, Namur, and Liege.

The *government* of B. is a limited constitutional monarchy, established in its present form by the revolution of 1830. The legislative body consists of two chambers—senate, and representatives. A responsible ministry, with the king as president, is at the head of all public affairs, and its measures are carried into effect by the governors of the several provinces. The ministry includes departments for home affairs, foreign affairs, finance, justice, public works, and war. The administration of justice retains the forms of French jurisprudence. In 1901, the revenue was $100,158,100; expenditure $99,507,060; imports $728,120,000; exports $647,880,000.

The standing army of B. is formed by conscription, to which every healthy man who has passed his nineteenth year is liable. Substitution is allowed. The legal period of service is 13 years, but five of these are passed in the reserve. According to laws of 1870 and 1873, the strength of the army is to be 114,000 men on the war footing, and 47,000 in times of peace. The importance of B. in a military point of view affords a reason for the maintenance of fortifications at Antwerp, Ostend, Nieuport, Ypres, Tournay, Mons, and other places. See ARMIES.

History of Belgium to 1830.—In the time of the Romans, the name of *Gallia Belgica* was given to the southern Netherlands lying on the confines of Gaul and Germany. It was peopled by Celtic and German tribes. The latter were predominant in Batavia and Friesland, and, under the rule of the Franks in the 5th and 6th c., gained the ascendency also in the s. districts. Until the close of the 11th c., the feudal system, which arose at the fall of the Carlovingian dynasty, prevailed in the Netherlands, where the several s. provinces were made duchies and counties. The county of

Flanders, superior to all the others in industry and commerce, maintained, during a long struggle, its independence against France; and, in 1385, when the male line of the Counts of Flanders expired, was annexed to the powerful House of Burgundy, which, in the beginning of the 15th c, gained possession of all the other provinces of the Netherlands. The rulers of Burgundy aimed at founding a powerful united state between France and Germany, and therefore endeavored to repress the free republican spirit which manifested itself in the rapidly rising towns. The work of establishing unlimited sovereignty was interrupted by the fall of Charles the Bold, and the partial division of his territories; but was continued by the Emperor Charles V., the grandson of Emperor Maximilian, and Maria, the heiress of Burgundy—through the latter of whom the Netherlands passed into the possession of the House of Hapsburg. After the abdication of Charles, these provinces passed into the hands of Philip II., and by the law of primogeniture, should have remained united with Spain. But scarcely had the peace of Cateau-Cambresis (1559) put an end to the encroachments of France, when the religious disputes of the Reformation, and the despotic measures of Philip, excited in the provinces a long and bloody war for civil and religious freedom, which ended in the independence of the Northern or Teutonic Netherlands, while in the southern or more Celtic provinces (now included under B.), both the sovereignty of Spain and the rule of the Rom. Cath. church continued. In 1598, B. was ceded by Philip II. to his daughter Isabella, wife of the Archduke Albert, when it became a distinct and independent kingdom. Several measures for the better regulation of internal affairs, especially in the administration of justice, and for the revival of industry, which had been injured by the unenlightened policy of Philip, were projected. Unfortunately, Albert died childless, 1621, and B. fell back into the hands of Spain, and became involved in the wars attending the decline of the Spanish monarchy. Peace was concluded chiefly at the cost of Belgium. By the treaty of Pyrenees (1659), the counties of Artois, Thionville, and other districts, were given to France. Subsequent conquests by the same powerful neighbor secured at the peace of Aix-la-Chapelle (1668), the possession also of Lille, Charleroi, Oudenarde, Courtray, and other places. These were partly restored to B. at the peace of Nimeguen; but as a compensation, Valenciennes, Nieuport, Cambray, St. Omer, Charlemont, and other places were given up, and only partially regained by B. at the peace of Ryswick, 1697. After the conclusion of this treaty, at the close of the reign of Charles II. of Spain, some endeavors were made to create prosperity in B. by a new system of taxation and customs, and by the construction of canals, to counteract the injury done to its commerce by the closing of the navigation of the Scheldt; but these projected improvements were interrupted by the Spanish War of Succession, which was not concluded until the peace of Utrecht, 1713. By this treaty, B. was given

to Austria, Holland retaining the privilege of garrisoning the most important fortresses on the French frontier, and of exercising a monopoly of the navigation of the Scheldt. The 'Belgian Commercial Company' at Ostend, founded by Charles VI., 1722, fell in 1731—another sacrifice to the cupidity of Holland. During the Austrian War of Succession (1744), almost the whole country fell into the hands of the French; but was peaceably restored to Austria by the treaty of Aix-la-Chapelle (1748).

B. remained undisturbed by the Seven Years' War, and during the long peace following the treaty of Aix-la-Chapelle, prosperity was restored. The reign of Joseph II., son and successor of Maria Theresa, began in disputes with Holland. The latter country consented to the abolition of the *Barrière-contract*, in consequence of which several important fortresses were demolished, though the emperor failed in his endeavor to make free the navigation of the Scheldt. But the errors of his internal administration were the serious feature of his policy. By his innovations, he offended the religious sympathies of the people, and violated the legal privileges of the states, of which he had made the strict preservation a condition of obedience. In a short time, discontent openly manifested itself. The Austrian authorities were attacked; Brabant refused to pay taxes; while the more violent fled into Holland, and organized an armed expedition. Returning, they were joined by numbers of the inhabitants, defeated the foreign troops, captured Brussels, and in the beginning of 1790 declared their independence. In the course of the year, however, the Austrians succeeded in regaining possession of the country. The privileges of the states as they existed at the close of the reign of Maria Theresa were restored, and at the same time stringent measures were adopted to prevent any renewal of disturbances. But this state of peace was soon interrupted by the outbreak of the war of the French Revolution. B. was conquered by Pichegru in the campaign of 1794, and subsequently united to France by the treaties of Campo-Formio and Lunéville. It then shared in the fortunes of France during the Consulate and the Empire; received the *Code Napoleon;* and in all political relations was organized as a part of France. After the fall of Napoleon it was united with Holland.

At the introduction of the new constitution, the want of national unity in language, faith, and manners was strikingly manifested by the two great parties—the Dutch Protestant population, with their commercial habits, on the one side, and the Rom. Cath. population, of agricultural and manufacturing B., on the other. These natural and unavoidable obstacles to the political harmony of the new kingdom were increased by the unfair treatment which B. experienced. All the more important provisions of the constitution had a regard chiefly to the interests of Holland. Repeated attempts were made to supersede the Belgian language by the Dutch in all affairs of adminis-

tration and jurisprudence, though the former were the more numerous people; the privileges of the Belgian clergy were abridged; the poorer classes were severely taxed; while the government was almost exclusively composed of Dutchmen. In 1830, among seven ministers, there was only *one* Belgian; among 117 functionaries of the ministry of the interior, only 11 Belgians; among 102 subordinates of the ministry at war, only 3 Belgians; and among 1,573 officers of infantry, only 274 Belgians. B. was politically divided into two classes—the Liberal and the Rom. Catholic. Both of these strongly resented and opposed the encroachments of Holland: the Liberals, from a desire to preserve the national secular institutions; the Rom. Catholics, from a desire to preserve the national church. The government became alarmed at their increasing hostility; and ultimately, when their patriotic fusion rendered its position critical, it made several concessions; the supremacy of the Dutch language, and the taxes on the necessaries of life, were abolished. Efforts were also made to conciliate the Rom. Catholic priesthood. But these concessions came too late, and were, in consequence, construed only as signs of weakness. In 1828–9 it was attempted to coerce and intimidate the opposition, by prosecuting the liberal or democratic leaders. This only fanned the fire of discontent, which was already burning fiercely in the hearts of the Belgians, and panting for an opportunity to break out into visible insurrection.

From 1830 *to the present time.*—The French revolution of 1830 afforded the desired occasion. On the king's birthday (1830, Aug. 24), several riots occurred in various towns of Belgium. At this period, however, the idea of separation from Holland does not seem to have presented itself consciously to the Belgian mind; the deputies who were sent to the Hague to state the causes of the general dissatisfaction merely insisted on its possessing a separate administration, with the redress of particular grievances. But the dilatory and obstructive conduct of the Dutch deputies in the states-general assembled at the Hague, Sept. 13, exasperated the Belgian nation beyond measure. A new and more resolute insurrection instantly took place In seven days, the people had deposed the old authorities, and appointed a provisional government. Prince Frederick, the son of the sovereign, who commanded his father's troops, was compelled to retreat from Brussels to Antwerp, having suffered considerable loss. On Oct. 4, B was declared independent by the provisional government, composed of Messieurs Rogier, D'Hooghvorst (commandant of the civic guard), Joly, an officer of engineers, and the secretaries Vanderlinden and De Coppin; Count Felix de Mérode, Gendebien, Van de Meyer, Nicolai, and De Potter, the democratic leader. They also announced that a sketch of the new constitution was in course of preparation, and that a national congress of 200 deputies would shortly be called together. Freedom of education, of the press, of religious worship, etc., were proclaimed. Here and there, the new liberty showed a tendency to

become anarchic; but its excesses were speedily suppressed; and at the national congress of Nov. 10, out of 187 votes, only 13 were in favor of a democratic government. Meanwhile, the London congress had assembled, and after mature deliberation, recognized the severance of the two kingdoms as a *fait accompli* (Dec. 10). The Belgian congress, on its assembly, appointed Baron Surlet de Chokier provisional regent, but on July 9 elected Prince Leopold of Saxe-Coburg king, who entered Brussels on the 21st of the same month, and subscribed the laws of the constitution. This prince proved himself one of the wisest monarchs of modern times. He died 1865, and was succeeded by his son, Leopold II., the late king of Belgium. Holland refused to acknowledge the validity of the decision of the London congress, and declared war against B., which was speedily terminated by France and England—Holland securing that B. should annually pay 8,400,000 guilders as interest for its share in the national debt of Holland. The latter country, however, was still dissatisfied, and ventured to employ force. England and France were compelled to interfere. The blockade of the coast of Holland brought the Dutch to terms, and the dispute was closed by a treaty signed in London, 1833, May 21.

The monarchy of B. is hereditary, according to the law of primogeniture, but with a perpetual exclusion of females and their descendants. The legislative power is vested in the king and two chambers, the Senate and the Chamber of Deputies. The latter is elected for four years in the proportion of 1 to every 40,000 inhabitants. It now numbers 166. The electoral system is somewhat complex. Every male citizen over 25 has a vote. An additional vote is accorded (1) wherever a citizen is 35, married, with legitimate offspring, and pays a tax of 5 fr. to the state; (2) wherever a citizen is 25, owns or has an income from 2,000 fr. worth of immovable property, or has for 2 years received at least 200 frs. a year from Belgian funds. Two additional votes are given to citizens of 25 who possess a diploma of higher education or have filled a position implying such education. The Senate consists of 110 members.

In 1842, a law was carried in both chambers, by which it was enacted that the parishioners should be bound to provide elementary schools, according to the wants of the population, in all places where the want of education was not fully supplied by voluntary means. The main regulations for the universities were effected by the ministry of De Theux, 1835; but the organization of intermediate instruction (that is, between the *Ecoles Primaires* and the universities) was postponed, as involving some delicate party interests, until 1850; and even then was not concluded in a way satisfactory to the Rom. Cath. clergy.

In 1838, Holland and B. seemed likely to engage in war once more. According to the 'twenty-four articles' of the 'definitive treaty,' B. was under obligation to give up Limbourg and a part of Luxembourg during the above-

mentioned year. This it now refused to do, and put its army on a war-footing; but its obstinacy finally gave way to the unaminous decision of the five great powers.

After 1840, the opposition of the Rom. Cath. to the liberal party became more and more decided. The elections of 1841, June 8, were attended with great excitement, and it was a significant fact that the liberal candidates reelected were everywhere returned by large majorities, while in the principal towns where Rom. Catholics were returned, only small majorities appeared. Meantime, however, commerce was thriving under a wise and liberal policy.

In 1845, July, the liberal Van de Weyer, at the head of a new administration, endeavored to confirm the so-called 'union' of Rom. Catholics and liberals. But he had scarcely asserted the prerogative of the civil power in matters pertaining to the question of education in the 'intermediate schools,' when he was forsaken by his colleagues, who acted under the influence of the Rom. Cath. priesthood. In 1846, March, a purely Rom. Cath. ministry was formed under the presidency of De Theux. This was an anachronism, for the elections of 1845 had secured a victory for the liberals.

The elections of 1847 at last brought to a close the system of government in subservience to the church. A new liberal ministry was formed by Rogier and others, whose programme of policy promised the maintenance of the independent civil authority in all its subordinate functionaries; a budget favorable to the public with regard to duties on provisions; and measures to promote the interests of agriculture. The institution of numerous agricultural and commercial schools, normal *ateliers*, popular libraries, and other means used for raising the working-classes, were followed by most beneficial results. The revolutionary tempest of 1848, however, menaced the tranquillity of the country; but the king, at the outbreak of the catastrophe in France, promptly declared himself ready to retain or to surrender the crown of B. according to the decision of the people. This fr nk and ready declaration had a successful result in strengthening the party of order, while it disarmed even those most disaffected to the crown.

In 1848, July, the result of the elections was found to be a great strengthening of the liberal-constitutional party. In 1850, the educational question was supposed to be settled on soundly liberal principles; but since then there has been a keen and continued struggle between progressionists and ultramontanes, the balance of power shifting from time to time. Nevertheless, the country has steadily grown in prosperity, and constitutional principles have been strengthened. In 1885 the Congo Free State was recognized by the powers as being under the personal sovereignty of King Leopold. In 1890 he bequeathed the state to the Belgian govt., annexation to take place after 10 years. The matter, however, was not adjusted until

1908, when the Belgian parliament ratified the treaty of cession: see CONGO STATE.

BELGOROD, *běl-gō-rōd'* (Russian, *Bejelgorod*, 'White Town'): town in the Russian govt. of Kursk; on the Donetz, lat. 50° 40′ n., long. 36° 35′ e. B., which derives its name from a chalk-hill in the vicinity, is divided into two —the old and the new—towns. It is built chiefly of wood, is an archbishop's see, has numerous churches, two monasteries, manufactories of leather, soap, etc., and considerable trade in wax, bristles, and hemp. Three important fairs are held here during the year. Pop. about 21,000.

BELGRADE, *běl-grād':* the ancient *Singidunum*, styled by the Turks *Darol-Jihad*, the 'House of the Holy War,' and in German, *Weissenburg:* an important fortified and commercial town, capital of Servia; at the confluence of the rivers Save and Danube. The name B. is derived from the Slavonic *bielo*, 'white,' and *grad* or *grod*, a 'fort' or 'town.' B. is divided into four parts—the fortress, a very strong place, which, situated on the tongue of land between the rivers, commands the Danube; the Water Town, also well protected by walls and ditches, on the n.; the Raitzen Town on the w., and the Palanka on the s. and e. of the citadel. B. still has one mosque. The royal palace, the residence of the metropolitan, the national theatre, and the public offices are the principal buildings. Opposite the theatre is a bronze monument (1882) to Prince Michael III. B. has manufactories of arms, cutlery, saddlery, silk goods, carpets, etc., and is the seat of the chief Servian authorities. It is the entrepôt of the trade between Turkey and Austria. The position of B. has made it the chief point of communication between Constantinople and Vienna, and the key to Hungary on the s. e. It has consequently been the scene of many hard contests. The Greeks held it until 1073, when it was captured by the Hungarian king, Salomon. After this it passed through the hands of Greeks, Bulgarians, Bosnians, and Servians, and these last proprietors sold it, in the beginning of the 15th c., to the emperor Sigismund. In 1442, it was unsuccessfully besieged by the Turks, with a large and vain outlay of time and money; and when stormed (1456, Jul. 14), was retaken from the Turks by the heroism of Hunyades and Capistrano. In 1522, it was taken by the Sultan Soliman II. In 1688, it was stormed and taken by Maximilian, Elector of Bavaria; but in 1690 was recaptured by the Turks, when the Christian garrison had been reduced to 500 men. In 1693, B. was vainly besieged by the Duke of Croy; and in 1717, the citadel surrendered to Prince Eugene, after he had defeated an army of 200,000 Turks. with a loss to them of 20,000 men. But in 1739, B. again changed owners, the Turks obtaining it without a shot. In conformity with the treaty then signed, the fortifications were demolishd. In 1789, it was again taken to the Austrians, under General Laudon; but by the treaty of peace, 1791, was restored to the Turks. From 1806 to 1813 it was in the possession of the insurgent Servians·

and though on the founding of the principality of Servia, B. was made the capital, the citadel remained in the hands of the Turks till 1867. In that year the Porte was constrained by diplomacy to yield up this important possession to the Servian government, and it was evacuated by the Turks altogether, and since the Treaty of Berlin 1878, July, has been the capital of an independent state. An American consul resides here. See SERVIA. Pop. about 80,000.

BELGRADO, *bĕl-grâ'do,* GIACOMO: 1704-89; b. Udine: Italian Jesuit, at first prof. of belles-lettres at Venice; and later teacher of mathematics and physics at the Univ. of Parma, where also he was appointed court mathematician. He was member of the Institute of Bologna, and of nearly all the learned societies of Italy. He left many works upon the mathematical and physical sciences, nearly all in Latin. The most important is: *Ad disciplinam mechanicam, nauticam et geographicam, Acroasis critica et geographica* (Parma, 1741, quarto).

BELGRAND, *bĕl-grân',* MARIE FRANÇOIS EUGENE, French civil engineer: b. Ervy, 1810, April 23; d. 1878, April 8. He designed the gigantic sewerage system and water supply system of Paris, and published *La Seine; Les Tranvaux Souterrains de Paris; Les eaux Anciennes de Paris;* etc.

BELGRAVIA: the name given to the fashionable quarter of London south and west of Belgrave Square. Till the early part of the 19th century the district was a marshy farm.

BELHOMME, *bĕl-om'* or *bā-lom',* DOM HUMBERT: 1653—1727; b. Bar-le-Duc: French Benedictine friar and preacher. He became abbot (1703) of Moyenmoutier, and enriched that abbey with one of the largest and best selected libraries of Lorraine. This savant left: *Historia Mediana monasterii in vorayo* (Strasburg, 1724, quarto), a work containing very curious details concerning the ancient Mayors of the Palace and about the dukes of Lorraine and of Alsace: *Chroniques diverses,* from Hidulphe to the commencement of the 11th c.; and *Fragment de la Chronique de Jean de Bayon,* wherein we find documents useful to consult for the history of Lorraine in the 11th and 12th centuries.

BELIAL, n. *bē'lĭ-ăl* (though more accurately *bē-lī'ăl*) [Heb. unprofitableness]: worthlessness; wickedness. The Scripture phrase, 'Sons of B.,' was originally, in all probability, a mere Hebrew figurative expression denoting worthless or dissolute persons. At a later period, the idea of evil which the word embodies seems to have been elaborated into a personality, a spirit of evil; and B. is supposed by some to correspond to the Pluto of the Greeks.

BELIE, v. *bĕ-lī'* [AS. *belecgan;* Ger. *belügen,* to tell lies of one: AS. *be, leógan,* to lie]: to show to be false; to falsify; to slander; to feign; to pretend. BELYING, imp. *bĕ-lī'ĭng.* BELIED, pp. *bĕ-līd'.*

BELIEF, n. *be-lēf* [AS. *geleáfa*, belief: Goth. *galaubjan*, to believe: Ger. *glauben*, to believe]: trust in a thing as true; credit; persuasion. BELIEVE, v. *bĕ-lēv′*, to trust in as true; to credit; to be persuaded of. BELIEV′ING, imp.: ADJ. in the condition of one who believes: N. the act of putting trust in as true. BELIEVED, pp. *bĕ-lēvd′*. BELIEV′ER, n. one who believes; *colloquially*, a Christian. BELIEV′ABLE, a. *-ă-bl*, able to be believed. BELIEV′INGLY, ad. *-lĭ*.—SYN. of 'belief': credit; trust; faith; persuasion; conviction; confidence; doctrine; opinion.

BELIEF: a word sufficiently intelligible in common speech, but with which various subtle problems and protracted controversies have been connected in mental and moral philosophy.

For the psychologist belief is a process or attitude of consciousness attaching to the results of reasoning and to perception that gives us confidence in their objective existence. Two problems require solution; 1. What is the nature of the process? 2. Why does the process attach in one connection and not in another?

The first question has been answered in two ways. Brentano, among others would make belief (for him treated under the head of judgment) an unanalysable mental process on the same level of primariness as sensation. Others again, with more evidence, would assert that belief is the primitive process that naturally attaches to all mental states, just because they are mental, while positive and more sophisticated motives are needed to induce doubt of disbelief (e.g. Bain). Of these two alternatives the latter seems to harmonize better with the natural credulity of mankind, particularly uninstructed mankind, with the fact that belief becomes more difficult and more rare with growing knowledge, and with the results of introspection, that reveals belief as the negative, doubt as the positive process.

Why this mental state should make its appearance is an equally uncertain problem. Historically we may distinguish three stages in the development. The first serious discussion of the problem in psychological terms was given by Hume. For him the source of belief in all of its aspects was to be found in the definiteness and intensity of ideas. We believe that which is clear and intense; we doubt or disbelieve all that is vague, indistinct or faint. Similarly of memories and casual connections, we believe those that have been frequently repeated and so are easily and vividly recalled and we disbelieve others; in a slightly different but related field, we believe those elements to be causally connected that are frequently connected, and we regard as chance the connections that are less frequent and so less easily recalled. This theory evidently harmonizes in a very general way with the results of our observations, but fails to cover a large number. We believe very many impressions that are faint and indistinct, and doubt

many that present themselves in memory or perception with considerable clearness.

Another theory that has had a large influence was propounded by Bain. Two elements of Bain's theory are important in their influence on modern thought. The first that attracted less attention, but is probably little open to question, is the one already referred to, that belief is the natural or näive state of mind, and that it is doubt or disbelief that needs explanation. The second phase of this theory is that we are ready to believe anything that we are prepared to act upon. Coming up to the edge of a frozen lake, and looking at the thickness of the ice, we believe that it will bear to be trodden on, and accordingly walk across it. The meaning or purport of the believing state here is, that we do not hesitate to trust our safety to the fact believed. The measure of our confidence is the measure of our readiness to act upon our conviction. If the frozen lake lie between us and our destination, we feel elated by the certainty of arriving there, which we should not under a weak or imperfect trust in the goodness of the ice. The question arises in connection with this phase of Bain's theory, still generally current in one form or another, whether we do not have here merely a restatement of the problem, whether readiness for action and belief are not identical. If one grant Bain's assumption, is one not at once met with the question why are you convinced that the act will be successful in advance of action, of test? In other words the weakness of the theory is that it merely defines belief in terms of other processes; it does not explain or assign its conditions.

Another step in advance was made by James, for whom belief is in part at least dependent upon the self-consistency of the fact or of the assertion that is to be tested. We certainly disbelieve those things or assertions whose parts are not consistent with the whole or with each other. James also asserts that the emotions color belief and more recently that we believe what we desire; that belief is a matter partly under voluntary control. Each of these assertions must engage our attention later. For the present we may be content with adding the first result of his treatment to the facts gleaned from the other historical theories. If we summarize these results so far as they stand, we may assert with Hume that belief must have some immediate sensory basis and that this is in part dependent upon the intensity or clearness of the elements that compose it; we may certainly agree with Bain that we believe at first glance everything that enters the mind and that we require reasons to doubt or to refuse belief; and with James we may assert that we believe the self-consistent alone, that one certain condition of doubt is inconsistency between the parts of the experience in question. But if we accept these results in their entirety we have not solved our problem altogether. There are many statements and experiences that are intense, and

consistent in all their parts that are still not fully believed, while some things are believed that fail to conform to these conditions in one particular or another. It is evident then that we must examine more closely the occasions and conditions of belief if we are to obtain a satisfactory answer to our problem.

Since we are content to accept Bain's assertion that we believe ordinarily and doubt only when occasion is given, we can obtain most enlightenment from a study of the conditions of doubt or of disbelief. We must go beyond the experience that is to be believed or disbelieved to many other experiences in the life of the individual if we are to determine what it is that will be believed at any time or under any set of circumstances. As a preliminary to this discussion we must make a general statement with reference to the forces that enable us to perceive anything and that direct attention into one channel or another. No object comes into consciousness in and of itself alone. Whether it shall or shall not enter is determined by older experiences, that happen to be dominant at the time, by the mood of the moment, immediately antecedent mental states and many other factors (*v.* ATTENTION). Furthermore, how the newly entering experience is to be apprehended also depends upon earlier knowledge that is aroused at the moment to join with the bare sensation, or stimulus that is pressing to enter consciousness at that instant. In these two ways very much of earlier experience is active or permissive in the perception of an object or the interpretation of a statement. To the interaction of these forces we must look very largely for an understanding or explanation of belief. When the assertion or the object in question is in harmony with the object that is asserted to be present or with the statement made by another, we have belief; when there is conflict between two interpretations we have doubt; when some other system, or interpretation than was first suggested, triumphs, we have disbelief.

As we look at some simple object, a bird, e.g., in a distant tree, we say to ourselves, or a friend says to us, 'it is a tanager;' for the moment we believe, then suddenly we note that the red is not upon the bird but a dead leaf partly obscures it and has given color to the plumage. We disbelieve, because the interpretation is seen to be out of harmony with the facts. If the interpretation wavers between the two, if the bird is seen now as sparrow behind a dead leaf, and now as a tanager, we have doubt, and doubt persists as long as the two interpretations are both present and neither wins in the struggle for the mastery. In these cases doubt or disbelief arises from a conflict in the interpretations that arise when the object presents itself to consciousness; doubt is a concomitant of a conflict of interpretations, belief of the persistence of one interpretation in consciousness unchallenged. On the other hand we may find that the disbelief arises because of a conflict between the interpretation that results imme-

iately and persists and some other element of knowledge. So for example a friend may point out a bird as a tanager, and we may doubt his statement because of the dull colors of the plumage, until suddenly we recall or are informed that the plumage of the female is very much more sober than is that of the male. Or again we have disbelief because there is conflict not between opposing interpretations, or between one interpretation and other elements of our experience, but because of conflicting moods or considerations that actually compel us to see the same thing in different ways. These cases occur more rarely in instances of perception, but they are the rule in matters of theory and the practical discussions of life. It may be illustrated however in cases of ambiguous perspective where an object drawn in lines that can be equally well interpreted as outlining a convex or concave surface will be seen first in one way then in another, according to the way in which we look and the purpose we have in mind in the observation. In all of these instances that are simple enough to be open to unprejudiced observation we find first that belief is a matter of the interaction of earlier experiences upon the present in some way or other, and second, we find that belief is always the negative process that comes from lack of conflict, that alternate dominance of one idea or mood and then another gives doubt, while disbelief is no peculiar process but is merely belief in something else.

These same conditions of belief apply with equal force to the matters of every day life and practice, from the rumor told by the passing acquaintance to the platforms of political parties, the theories of science and the creeds of churches. Whatever harmonizes in every respect with your earlier experience will be believed, while whatever seriously clashes with that experience will be disbelieved. Thus you read in the morning paper two items each vouched for on equal authority, a story of a neighborhood ghost, and the story of a scientific invention. The one, let us say, fails to harmonize with your other experiences; you are aware of the uncertain conditions of observation that surround the matter, you immediately disbelieve. While you know of the experiments that have been under way with reference to the scientific invention; you know too, that the undertaking is feasible from your other scientific knowledge, that there had been lacking some slight detail alone to have made success possible at an earlier time, and at once you accept this statement without question, and you do so for one reason alone and that is that it is in harmony with other things that you knew before. Similarly in science, a theory is accepted just as long as it will agree with the known facts. Whenever a fact that is inconsistent with the theory is discovered, or as soon as some new way of regarding old facts becomes generally accepted, the old theory must at once be given up. So the old theories of matter are at this moment going to pieces partly under the influ-

ence of the results of the investigations of radium and allied substances and partly under the more general acceptance of the ways of looking at facts that have been introduced by the physical chemist. In either case it can be seen that doubt comes from conflict between the theory and related facts, or between the theory and other generally accepted interpretations.

Other evidence that belief is the result of this harmony between the fact in question and experience as a whole is furnished by such cases of partial belief as we find in the story attitude or in cases of belief followed by disbelief as in dreams. In dreams we believe the results as long as we sleep or are subject to the mental conditions that induced the associatory processes; when we wake, on the contrary, belief disappears. If we translate this fact into terms of experience and of our theory, we would have part of the brain asleep and only a small portion active in the control of the course of association and in passing upon the truth of the results of the association. As long as one is asleep the parts of the experience effective harmonize with the dream, but as soon as one wakes the results of the activity of a partial consciousness are tested by the full consciousness and are found wanting, are pronounced untrue, unreal. Similarly we may pass upon an assertion or an object of imagination with an artificially narrowed consciousness, and assert that it is true, knowing that it is true in some partial sense alone, not in the most complete or highest sense. This marks the attitude of artistic appreciation in general. As we read the novel we are testing the assertions only within the limits that the artist sets when he wrote and we consequently accept his art as true if his characters are consistent with his first implicit assumptions, if they act always as the characters that he has drawn would act in real life. At the same time we know that there is no absolute truth, that part of our experience is not drawn upon in the judgment we pass. All of these individual facts, then, harmonize with the assumption that belief results from the harmony of earlier experience with the presentation to be tested, and that doubt or disbelief arise from any conflict between earlier and present experience.

The relation of belief to volition and to emotion remains to be considered. It is often asserted that we can believe what we will. If however belief is an automatic expression of earlier acquired experiences, it would necessarily follow that belief could change with changes in experience alone. This is less out of harmony with the popular view than at first sight appears, if we remember that will too is very largely, if not entirely, dependent upon earlier experiences, according to the theories more generally accepted by modern psychologists (*vide* WILL).

Emotion, too, probably acts merely to over-emphasize one phase of experience temporarily or permanently at the expense of others. During emotion, events present

themselves in a different light from that in which they appear in a calm moment, but the reason for this is to be found in a change in the ideas and memories that are effective in the interpretation. The same can be said of the influence of oratory in stirring or changing beliefs. The orator unduly emphasizes certain facts at the expense of others that it is to his interest to keep concealed. The result is a temporary belief, if the conclusions are fallacious; a permanent state, if later experience tends to show that the facts that he had emphasized are real and had merely been overlooked previously.

That beliefs persist, as we frequently see them, after they are out of all harmony with the knowledge of the times or of the race, is not so much an evidence that will or emotion determines belief without reference to experience as that men frequently do not take the trouble to think of certain matters. They do not view facts with reference to other related facts, but keep parts of their experience isolated from the whole. If you can force them, as by eloquence, to bring the two parts of their knowledge together, the anachronistic belief vanishes immediately, and spontaneously. Unfortunately, however, it is not easy to force men to face facts in this way, and even after facts cease to be believed, the forms of belief continue from habit.

BELISARIUS, *bel-ĭ-sā′rĭ-us* (in Slavonic, *Beli-tzar* 'White Prince'): abt. 505–564, March; b. Germania, Illyria: a heroic and loyal soldier, to whom the emperor Justinian was principally indebted for the glory of his reign. He first became conspicuous when he was appointed to the command of the eastern army of the empire, stationed on the confines of Persia, where, 530, he gained a victory over a Persian army nearly twice as large as his own. The historian Procopius was at this time secretary to B. In the following year, when the Persians had penetrated into Syria, intending to attack Antioch, B. being compelled by the impatience of his troops to offer battle at Callinicum, a town at the junction of the rivers Bilecha, and Euphrates, was defeated, and in consequence recalled. This petulant injustice, however, did not weaken that principle of duty which ever controlled and inspired the great soldier. He still remained the firm supporter of his sovereign. In Constantinople, the strife of the two parties, styled respectively 'the green' and 'the blue,' had endangered the authority and even the life of Justinian; already a new emperor, Hypatius, had been elected, when B., at the head of the life-guards, attacked and slew, in the race-course, 30,000 of the green or anti-loyalist party, and thus restored tranquillity. Previous to this, he had married a wealthy but profligate woman, Antonina, whom he loved with the same blind uxoriousness that Marcus Aurelius exhibited towards Faustina. The only points in his history which are not edifying are those in which he yielded to her noxious

solicitations. The military career of B. may be divided into two great epochs; the war against the Vandals in Africa, and the war against the Goths in Italy, which again subdivides itself into two campaigns, with an interval of four years between them. The first of these epochs was commenced by Justinian sending B., in 533, with an army of 15,000 men into Africa, in order to recover the provinces there held by the Vandal king, Gelimer. After achieving two victories, B. made the king a prisoner, seized his treasures, and after conquering Sardinia, Corsica, and the Balearic Isles, brought him to Constantinople. The African Vandals never recovered from this overthrow. Medals were struck in B.'s honor; and 535, Jan. 1, he was invested with the dignity of 'consul.' The second war was occasioned by the divisions existing in the royal family of the Ostrogoths, which induced Justinian to attempt to wrest Italy from the hands of the barbarians. In 535, B. conquered Sicily; and in the autumn of 536 crossed over to lower Italy, where all the cities submitted to him except Naples, which he carried by storm. On Dec. 10 he entered Rome. As he found his forces not strong enough to contend with the Goths in open field, he allowed himself to be enclosed and besieged in Rome; after the defense had lasted a year, the Goths raised the siege. In 538, Narses had been sent with a reinforcement for the army in Italy: but some misunderstanding occurring between the two generals, they were prevented from relieving Milan, which, 539, was captured and devastated by Braias, nephew of the Gothic king, Vitiges. Consequently, Narses was recalled from Italy; and B., now placed at the head of both armies, refused to assent to a treaty proposed to King Vitiges by Justinian's ambassadors. Vitiges had persuaded the Persian king, Chosroes, to invade the eastern Roman territory. B. now drove the Goths back to Ravenna, which he captured, 540, with Vitiges himself. But before he could complete his conquest of the Goths, he was recalled by Justinian to Constantinople. In 541-542, he was engaged in a campaign against the Persians, who had captured Antioch; but was again recalled, and the enterprise necessarily proved indecisive. His second great struggle with the Ostrogoths now begins. In 544, the barbarians, under Totila, again invaded and reconquered Italy. B. was sent against them, but with an insufficient army. He, however, maintained his ground for five years, and even succeeded so far as to regain possession of Rome. But, in spite of his repeated entreaties, no reinforcements were sent to him; and, 548, Sep., he gave up the command, his rival, Narses, being appointed in his place. After ten years of retirement, B. once more came forward at the head of an army hastily collected, and overthrew the Bulgarians, who had threatened Constantinople. Here he was at length accused of a conspiracy against Justinian, and imprisoned, 563, Dec.; but Justinian became convinced of B.'s innocence, and restored him, after six months, to all his honors.

BELKNAP, *bĕl'năp*, GEORGE EUGENE: naval officer: 1832, Jan. 22—1903, April 7; b. Newport, N. H. He entered the U. S. navy as midshipman, 1847, Oct. 7; was promoted passed midshipman 1853, June 10; master 1855; lieut.-commander 1862, July 15; commander 1866, July 25. In 1856, Nov., he was engaged against the forts at the mouth of Canton river, China. In the Charleston harbor operations, 1862–64, he commanded the *New Ironsides*, and the *Seneca* and *Canonicus* during 1864; and assisted in the search for the *Stonewall Jackson*, Confederate iron-clad, in W. Indian waters. He was commended by Adm. Porter for his skill in handling the monitors. In 1867–8 B. was in command of the *Hartford*, of the Asiatic squadron. He was stationed at the Boston navy-yard 1869, was engaged in deep-sea soundings 1874, and was appointed capt. 1875, Jan. 25. He was appointed supt. of the naval observatory and promoted commodore 1885, June 2; promoted rear-admiral 1889, Feb. 12; and 1893 was pres. of the board of inspection and survey.

BELKNAP, JEREMY, S.T.D.: Congl. minister and author: 1744, June 4—1798, June 20; b. Boston. After graduating at Harvard 1762, he studied theology and taught school until 1767, Feb. 18, when he was ordained pastor of the First Chh. (Congl.), Dover, N. H. He was called to Boston 1787, Apr. 4, to take charge of the Federal St. Chh., and continued in this charge until his death. B. was a constant student from his boyhood, and accustomed to keeping notes of his reading.—The first published result being, *History of New Hampshire* (3 vols. 1784–92), in aid of which the N. H. legislature granted the author $250. He received from Harvard the degree S.T.D., 1792, and was made an overseer of the college. He founded the Mass. Hist. Soc. 1790. In 1793 he published a life of Isaac Watts; and 2 vols. of *American Biographies* 1794–98, a collection of psalms and hymns having been issued by him 1795. He published also *The Foresters, an American Tale*, 1796. He wrote many essays on various subjects, particularly in opposition to the African slave-trade.

BELKNAP, *bĕl'năp*, WILLIAM WORTH: 1829, Sep. 22—1890, Oct. 13; b. Newburgh, N. Y.: soldier and cabinet minister. Having graduated at Princeton 1848, and thereafter studied law, he began practice at Keokuk, Io., 1851. He was elected to the Io. legislature 1857; at the outbreak of the war, he entered the army, and was commissioned major of the 15th Io. regt.; was in the actions at Shiloh, Corinth, and Vicksburg, and served under Sherman in the Atlanta campaign; was made brig gen. 1864, July 30; brevet maj.gen. 1865, March 13. He was in the revenue service of the govt. thereafter till 1869, when Pres. Grant named him sec. of war, which office he held till 1876, March 7, when, having been impeached before the senate and tried on charges of official corruption—on which he was acquitted on the technical ground of lack of jurisdiction—he retired from public life.

BELL, n. *bĕl* [AS. *bellan*; Icel. *belja*, to sound loudly; *bialla*, an instrument for making a loud noise]: a hollow body producing musical sound when struck, especially when of the typical form of a hollow hemisphere expanding into a broad mouth, and sounded with a swinging clapper; anything expanding mouth outward like a bell, as the cup of a flower; any small annunciator or gong, when operated by an electric current called *electric* (see ELECTRICAL COMMUNICATION, SYSTEMS OF) B. V. to grow in the form of bells: to make a loud noise, said of deer. BEL'LING, imp. BELLED, pp. *bĕld*. BELLS, n. pl. *Naut.* the half hours of a watch, indicated by a bell. BELL-BIRD, n. one of several birds having a bell-like note. See in vocabulary place. BELL-BOY, n. a boy who answers a call-bell, as in a hotel. BELL-BUOY, n. a buoy, as in a channel, bearing a bell to warn mariners. BELL-CLAPPER, n. the pendant striker for sounding a bell. BELL-CRANK, n. a bent lever, used for changing a vertical into a horizontal motion, so called because commonly used to join the wires of a door-bell in turning a corner. BELL-DECK, n. the level or deck on which a bell is hung in a tower. BELL-FLOWER, n. a flower shaped like a bell. The English bluebell or wild hyacinth is the *Hyacin'thus non-scrip'tus* or *Endym'ion nutans*, order *Liliaceæ*. The bluebell of Scotland, or harebell, is the *Campan'ula rotun'difolia*, order *Campan'ulaceæ*. BELL-FOUNDER, n. one who casts large metal bells. BELL-GABLE, n. a roof-gable under which a bell is hung. BELL-GLASS, n. a glass vessel shaped like a bell, inverted as a protection for plants. See also BELL-JAR. BELL-HANGER, n. one whose trade is to fit up bells in houses, and hang the wires. BELL-HORSE, n. in England, a workman who exerts himself to set a pace for others. BELL-JAR, n. a chemist's bell-shaped jar. BELL-MAGNET, n. a magnet operating on the horseshoe principle, but formed like a bell that is split lengthwise through the center. BELL-MAN, n. a town-crier. BELL-METAL, n. a metal for use in bell-founding, especially one of copper and tin, sometimes alloyed with antimony, bismuth, iron, lead, silver and zinc. BELL-METAL ORE, stannite. BELL-SCREW, n. a threaded bell-like mouth-piece on the end of a long rod, for grasping a well-boring tool that has been dropped in a driven well. BELL-SHAPED, a. in *bot.*, applied to a corolla when it bellies or swells out like a bell, as the Canterbury bells. BELL-STRAP, n. a strap in a street-car, connected with a bell, for signalling the motorman or driver. BELL TELEGRAPH, an old form of telegraph in which two bells of different pitch were sounded to give signals that might be interpreted by a code. BELL-WETHER, *bĕl-wĕth'er* [*bĕll*, and *wether*]: the wether or male sheep having a bell on its neck, and acting as the leader of the flock; a leader. BELL-WORK, n. in mining, a method of working in certain salt and ironstone deposits, in which the openings from the shaft are cut bell-shaped.

BELL, *bĕl:* a hollow body producing musical sound when struck; usually formed of a composition of copper and tin, called bell-metal. Authorities differ as to the best

proportions of the copper and tin. Some give 80 parts of copper to 20 of tin, or 4 to 1; others state the proportions as being 3 to 1. In the reign of Henry III. of England, it seems to have been 2 to 1; and the small bronze bells discovered by Mr. Layard in the palace of Nimroud, are found to contain 10 of copper to 1 of tin. Hand-bells are made often of brass, antimony alloyed with tin, German silver, real silver, and gold. The notion that in old times silver was mixed with bell-metal to sweeten the tone, is an error. Silver, in any quantity, would injure the tone. The quality of a bell depends not only on the composition of the metal of which it is made, but very much also on its shape, and on the proportions between its height, width, and thickness; for which the bell-founder has rules derived from experience, and confirmed by science. The pitch of a bell is higher the smaller it is. For a peal of four bells to give the pure chord of ground tone (key-note), third, fifth, and octave, the diameters require to be as 30, 24, 20, 15, and the weights as 80, 41, 24, 10. A less quantity of metal than is due to the calibre of the bell, though giving the same note, produces a meagre, harsh sound; and the real or fancied superiority in dignity of tone of some old bells is ascribed to a greater weight of metal having been allowed for the same note than modern economy would dictate. Bells have been cast of steel, some of which have had a tone nearly equal in fineness to that of the best bell-metal, but deficient in length, having less vibration. Some have been cast of glass, with considerable thickness of the material; and these give an extremely fine sound, but are too brittle to stand the continued use of a clapper.

Queen Mary's silver-gilt Hand-bell.

From a remote antiquity, cymbals and hand-bells were used in religious ceremonies. In Egypt, it is certain that the feast of Osiris was announced by ringing bells; Aaron, and other Jewish high-priests, wore golden bells attached to their vestments; and in Athens, the priests of Cybele used bells in their rites. The Greeks employed them (*koda*) in camps and garrison; and the Romans announced the hour of bathing and of business by the *tintinnabulum*. The introduction of bells into Christian churches is usually ascribed to Paulinus, Bishop of Nola in Campania (400); but there is no evidence of their existence for a century later. That they were first made in Campania, is inferred from the name given to them—*campanæ;* hence *campanile*, the bell-tower. Their use in churches and monasteries

soon spread through Christendom. They were introduced into France about 550; and Benedict, Abbot of Wearmouth, brought one from Italy for his church about 680. Pope Sabinian (600) ordained that every hour should be announced by sound of bell, that the people might be warned of the approach of *horæ canonicæ*, or hours of devotion. Bells came into use in the East in the 9th c., and in Switzerland and Germany in the 11th. Most of the bells first used in western Christendom seem to have been hand-bells. Several examples, some of them, it is believed, as old as the 6th c., are still preserved in Ireland, Scotland, and Wales. They are made of thin plates of hammered iron, bent into a four-sided form, fastened with rivets, and brazed or bronzed. Perhaps the most remarkable is that said to have belonged to St. Patrick, called the *Clog-an-eadhachta Phatraic*, or 'The bell of Patrick's Will.' It is 6 inches high, 5 inches broad, and 4 inches deep, and made (as an inscription in Irish shows) between the years 1091 and 1105. Some of the Scotch bells, of the same primitive type, are figured and described in Mr. Joseph Anderson's *Scotland in Early Christian Times* (Rhind Lectures, Edin. 1881). The four-sided bell of St. Gall, an Irish missionary (died about 646) is still shown in the monastery of the city which bears his name in Switzerland. Church-bells were suspended either in the steeples or church-towers, or in special bell-towers. They were long of comparatively small size: the bell which a king presented to the church of Orleans in the 11th c., and which was remarkable in its age, weighed only 2,600 pounds. In the 13th c., much larger bells began to be cast, but it was not until the 15th c. that they reached really considerable dimensions. The bell 'Jacqueline' of Paris, cast 1400, weighed 15,000 pounds; another Paris bell, cast 1472, weighed 25,000; the famous bell of Rouen, cast 1501, weighed 36,364 pounds. The largest bell in the world is the Great Bell or Monarch of Moscow, above 21 ft. in height and diameter, and weighing 193 tons. It was cast in 1734, but fell down during a fire in 1737, was injured, and remained sunk in the earth till 1837, when it was raised, and now forms the dome of a chapel made by excavating the space below it. Another Moscow bell, cast 1819, weighs 80 tons. The Great Bell at Pekin, 14 ft. high, with a diameter of 13 ft., weighs 53½ tons; those of Olmütz, Rouen, and Vienna, nearly 18 tons; that first cast for the New Palace at Westminster (but cracked), 14 tons; that of the Rom. Cath. cathedral at Montreal (cast 1847), 13½ tons; 'Great Peter,' placed in York Minster 1845, 10¾ tons; 'Great Tom,' at Lincoln, 5½ tons; the new Great Bell of St. Paul's, cast 1881, 17½ tons, the largest in the United Kingdom. Other large bells are those of Breslau, 11 tons; Paris, 12⅘ tons; Bruges, 10¼ tons; Görlitz, 10¾ tons; St. Stephen, 13½ tons; Rome, 8 tons; and of Oxford, 7½ tons.

The Liberty Bell: perhaps the most precious of our few historical relics, was cast by Lester and Pack, at

Whitechapel, London, bearing the inscription, 'By order of the Assembly of the province of Pennsylvania, for the State House in the City of Philadelphia, 1752. "Proclaim liberty throughout all the land to all the inhabitants thereof.' "—Lev. xxxv. 10.' On trial at Philadelphia, a crack was discovered, and it was recast there three times by Pass and Stow, and finally hung in the tower of the State House, 1753, June. It proclaimed the adoption of the Declaration of Independence, 1776, July 4, and thereafter was rung to celebrate victories, and tolled at the death of revolutionary heroes. It was again cracked while being tolled in memory of Chief-Justice Marshall 1835, July 8: the crack spread, and it was forever silenced 1843, Feb. 22. It was exhibited at the New Orleans Exposition 1885, and at the World's Columbian Exposition at Chicago, where it had an enthusiastic public welcome 1893, Apr. 29, and was conveyed to its place on a car drawn by 13 horses and surrounded by a guard of honor.—Diameter at tip 48 in., thickness of sound-bow 3¼ in., key note (Amer. pitch) E; weight 2,080 lbs.; cost in London about $500.

BELL, Alexander Graham: inventor: 1847, Mar. 3—————: b. Edinburgh; son of Alexander Melville B. He was educated in the High School and Univ. of Edinburgh; early became proficient in his father's and grandfather's system for removing impediments of speech; came to the United States 1872, and was appointed prof. of vocal physiology in Boston Univ.; and first exhibited his invention for transmitting sound by electricity at the Centennial Exhibition 1876. Since perfecting his telephone apparatus, he has applied himself closely to the introduction and maintenance of telephonic systems in all parts of the world, and has written many important technical works also on deaf-mute education. He described his invention of the photophone, by which he proposed to convey speech by a vibratory beam of light instead of a wire, before the Amer. Assoc. for the Adv. of Science in Boston 1880; made a fruitless effort to locate the bullet in Pres. Garfield's body by an improved induction balance 1881; and received the diploma and decoration of the Legion of Honor 1882.

BELL, Alexander Melville: educator: 1819, Mar. 1, —1905, Aug. 7: b. Edinburgh; son of Alexander B., inventor of a method for removing impediments in speech. He was educated by his father, was lecturer in the Univ. of Edinburgh and in New Coll. 1843–65, and in London Univ. 1865–70; removed to Canada 1870, and was instructor in Queen's Coll., Kingston, till 1877; was then appointed its register; and removed to the United States 1881. He greatly expanded his father's system; invented a method of instruction in orthoëpy for deaf-mutes, known as 'visible speech,' which is now successfully used in the leading deaf-and-dumb institutions of the world; and published *Principles of Speech and Elocution* (Edinburgh 1849); *Popular Stenography; Visible Speech and Universal Alphabetics; Line Writing on the Basis of Visible Speech; Faults of Speakers; The Standard Elocutionist; Lectures on Phonetics;* and *English Line Writing.*

BELL, ANDREW, D.D.: 1753-1832, Jan. 28; b. St. Andrews: author of the 'Madras System of Education.' He was educated at the University of St. Andrews. Subsequently, he took orders in the Church of England; and after residing for some time in British America, was appointed one of the chaplains at Fort St. George, Madras. While here, he was intrusted by the directors of the East India Company with the management of an institution for the education of the orphan children of the European military. As he found it impossible to obtain the services of properly qualified teachers, he resorted to the expedient of conducting the school by the aid of the scholars themselves. Hence originated the far-famed 'MONITORIAL SYSTEM' (q. v.). In 1797, having, on account of his health, returned to England, B. published a pamphlet entitled *An Experiment in Education, made at the Male Asylum of Madras; suggesting a System by which a School or Family may teach itself under the Superintendence of the Master or Parent.* This pamphlet attracted little attention, until Joseph Lancaster, a dissenter commenced to work upon the system, and gained for it public recognition. In 1803, Lancaster also published a tractate on education, recommending the monitorial system, as it was now called, and admitting B. to be the original inventor of it, an admission which he afterwards discreditably retracted. Lancasterian schools now began to spread over the country. Later in life, B. was made a prebendary of Westminster, and master of Sherborn Hospital, Durham. He was also a member of various learned societies. He died at Cheltenham. He left (besides a valuable estate) £120,000 for the purpose of founding educational institutions in Edinburgh, Glasgow, Leith, Aberdeen, Inverness, Cupar, and St. Andrews. See Meiklejohn's *An Old Educational Reformer* (1881).

BELL, ANDREW JAMES: Canadian educator: b. Ottawa, 1856, May 12. He was educated at the University of Toronto, and at Breslau University; became professor of Latin and literature in Victoria University in 1889. He is an active member of the Canadian Institute, and has contributed some important papers to its *Transactions.*

BELL, BENJAMIN TAYLOR A:, Scotch-Canadian mining expert: b. Edinburgh, 1863, July 2. He went to Canada in 1882, and became editor of the *Canada Mining Review,* and of the *Canada Mining, Iron and Steel Manual.* In 1890 he was appointed by the Dominion government, with Dr. Selwyn, to conduct the excursions through the mining and industrial centres of Canada of the Iron and Steel Institute of Great Britain, and the Verein Deutscher Eisenhüttenleute. The same year he organized the General Mining Association of the Province, and in 1892 was instrumental in uniting the coal, gold, and other mineral interests of Nova Scotia into a like organization.

BELL, SIR CHARLES: 1774–1842, Apr. 28; b. Edinburgh; bro. of JOHN (q.v.) eminent surgeon, whose discoveries in the nervous system have given him a wide fame. In 1797,

he was admitted a member of the Edinburgh College of Surgeons. In 1804, he went to London, and for some years lectured on anatomy and surgery. Admitted, in 1812, a member of the Royal College of Surgeons, London, he was elected one of the surgeons of the Middlesex Hospital, in which institution he delivered clinical lectures, and raised it to the highest repute. In 1824, he was appointed senior prof. of anatomy and surgery to the Royal College of Surgeons, and subsequently a member of the council. On the establishment of the London Univ., now University College, 1826, B. was placed at the head of their new medical school; but soon resigned, and confined himself to his extensive practice, chiefly in nervous affections. In 1831 he was one of the five eminent men knighted on the accession of William IV. In 1836 he was elected prof. of surgery in the Univ. of Edinburgh. He was a fellow of the Royal Societies of London and Edinburgh, and a member of other learned bodies. Author of various works on surgery and the nervous system, and editor, jointly with Lord Brougham, of Paley's *Evidences of Natural Religion*, B. was one of the eight distinguished men selected to write the celebrated Bridgewater Treatises, his contribution being on *The Hand, its Mechanism and Vital Endowments as evincing Design* (1834). Among his principal works are: *The Anatomy of the Brain explained, in a Series of Engravings*, 12 plates (Lond. 1802, 4to); *A Series of Engravings, explaining the Course of the Nerves* (Lond. 1804, 4to); *Essays on the Anatomy of Expression in Painting*, plates (Lond. 1806, 4to); posthumous edition, much enlarged, entitled *The Anatomy and Philosophy of Expression as connected with the Fine Arts* (Lond. 1844, 8vo); *A System of Operative Surgery*, 2 vols. (Lond. 1807–1809; 2d ed. 1814); *Dissertation on Gunshot Wounds* (Lond. 1814, 2 vols. 8vo); *Anatomy and Physiology of the Human Body*, 3 vols. (1816); various papers on the nervous system which originally appeared in the *Philosophical Transactions; Exposition of the Natural System of the Nerves of the Human Body* (1824); *Institutes of Surgery* (Edin. 2 vols. 1838, 12mo); Animal Mechanics, contributed to the *Library for the Diffusion of Useful Knowledge* (1828). *Nervous System of the Human Body* (1830, 4to). See *Correspondence of Sir Charles Bell* (1870).

BELL, George Joseph: Scottish lawyer: 1770, Mar. 20—1843, Sep. 23; b. Edinburgh; bro. of Sir Charles B. He was eminent in his profession, particularly in commercial law; was practically the author of the Scottish Judicature Act, was a clerk of the supreme court 1831, and chairman of the royal commission to examine into the state of the law 1833. He pub. several important works.

BELL, Henry: 1767, Apr. 7—1830, Nov. 14; b. Torphichen, Linlithgowshire, Scot.; fifth son of Patrick B.- a mechanic. B. was the successful introducer of steam navigation into Europe. After working three years as a stone-mason, he was, 1783, apprenticed to his uncle, a millwright. He was instructed in ship-modeling, and

studied mechanics with an engineer. In 1808, he removed to Helensburgh, where he kept the principal inn, and gave his attention to mechanical experiments. For the question as to how far B. was anticipated by Fulton and others, in his application of steam to navigation, see STEAM NAVIGATION.

BELL, HENRY GLASSFORD: Scottish lawyer and author: b. Glasgow, 1803; d. 1874. He founded the Edinburgh *Literary Journal,* 1828, was admitted to the bar in 1832 and became one of the most esteemed Scottish mercantile lawyers of his day. He published a spirited defense of Mary Queen of Scots (1830), *Summer and Winter Hours* (1831); *My Old Portfolio* (1832); *Romances and Minor Poems* (1866).

BELL, HENRY THOMAS MACKENZIE: English poet and critic: b. Liverpool, 1856, March 2. His collections of verse include *The Keeping of the Vow* (1879); *Verses of Varied Life* (1882); *Old Year Leaves* (1883); *Spring's Immortaliiy* (1896); *Pictures of Travel* (1898). He has also published such critical works as *Charles Whitehead* (1884); *Christina Rossetti* (1898).

BELL, HILLARY: American dramatic critic: b. Belfast, Ireland, 1857; d. New York, 1903, April 9. After coming to the United States he painted portraits for some years and subsequently engaged in journalism and was the dramatic and musical critic of the New York *Press.* He also edited the *Insurance Economist,* and was a vice-president of the Mutual Reserve Life Insurance Company. The life-size portrait which he painted of Ada Rehan as Katharine in *The Taming of the Shrew,* was presented by Augustin Daly to the Shakespeare Memorial at Stratford-on-Avon.

BELL, ISAAC: Amer. philanthropist; b. 1814; d. 1897; began business life in a banking house; later went south; and subsequently became identified with large financial and and other concerns in New York, and with the work of benevolent institutions; was president of the Department of Charities and Correction 1857–73; was instrumental in establishing Bellevue Hospital and also its Medical School (being president of the latter for many years), and the Normal College.

BELL, JAMES: Scotch geographer: b. Jedburgh, 1769; d. 1833. After receiving a liberal education he served an apprenticeship to the weaving business, and in 1790 commenced the manufacturing of cotton goods upon a large and respectable scale. In the universal depression occasioned by the shock of the French Revolution in 1793, he was reduced to the condition of a common warper; but having relinquished that line of life, he was about the year 1815 engaged to improve the *Glasgow system of Geography,* a work which had met with considerable encouragement, and was now, chiefly by the labors of Mr. Bell, extended to five volumes. It was well received by the public, and formed the basis of his principal work, *A System of Popular and Scientific Geography,* published at Glasgow

in six volumes. His *Gazetteer of England and Wales* was in the course of publication at the time of his death.

BELL, James: Canadian physician: b. North Gower, Ont., 1852, Oct. 10. He graduated at McGill University in 1877; became house surgeon of the Montreal General Hospital the same year, and medical superintendent of it in 1881. In 1885 he became a member of the hospital staff as assistant surgeon, and in 1886 full surgeon. In 1894 he was made consulting surgeon to the General Hospital, surgeon of the Royal Victoria Hospital of Montreal, and professor of clinical surgery in McGill University.

BELL, James Franklin: American soldier: b. Shelbyville, Ky., 1856, Jan. 9. He was graduated from the United States Military Academy 1878; served on the plains in the 7th United States Cavalry, 1878–94; and was aid to Gen. J. W. Forsyth in California, Arizona, and Washington. He went to the Philippines with the original expedition in 1898, and his military career there has been of the most daring and brilliant kind. As colonel of the 36th regiment of volunteers, he was not attached to any brigade, but acted as a free lance, reporting only to his division commander. He received a medal of honor for most distinguished gallantry in action 1899, Sept. 9, near Porac, in Luzon. While in advance of his regiment he charged seven insurgents with his pistol and compelled the surrender of the captain and two privates under a close and hot fire from the remaining insurgents, who were concealed in a bamboo thicket. In 1901, February, he was made a brigadier-general in the regular army, being promoted over more than 500 captains, 200 majors, 98 lieutenant-colonels, and 77 colonels. In 1906 he was appointed chief of staff.

BELL, James Montgomery: American soldier: b. Williamsburg, Pa., 1837, Oct. 1. He entered the 86th Ohio infantry, and served with distinction throughout the Civil War, being twice brevetted for gallant and meritorious services in the battles of the Wilderness and Ream's Station, Va. Entering the regular army as 2nd lieutenant in 7th Cavalry, 1866, he took part in the Cheyenne and Arapahoe war, 1867–9; the Sioux wars, 1876–81, and the Nez Percés war, 1877. He received a brevet-commission of lieutenant-colonel for gallant services in action against the Indians at Cañon Creek, Montana, 1877, Sept. 13. He commanded in southern Luzon, Philippine Islands, 1900–1, and was appointed brigadier-general of volunteers, 1900, Jan. 20. He became brigadier-general in the regular army, 1901, Sept. 17, and was retired, 1901, Oct. 1.

BELL, John: 1763, May 12—1820, Apr. 15; b. Edinburgh; second son of William, an Episc. minister; bro. of Sir Charles. He studied under the celebrated Black, Cullen, and Munro *secundus;* and commenced, 1786, lecturing at Edinburgh on surgery and anatomy, and in 1793 published the first vol. of his *Anatomy of the Human Body;* in 1797, appeared the second; and in 1802, the third. A vol.

of anatomical drawings by himself, illustrative of the structure of the bones, muscles, and joints, was published 1794; and another vol., illustrative of the arteries, with drawings by his brother (afterwards Sir Charles) appeared 1801. In 1800, he published a *Memorial concerning the Present State of Military Surgery.* His *System of the Anatomy of the Human Body,* and his *Discourses on the Nature and Cure of Wounds* (Edin. 1793–95), were translated into German. A good classical scholar, he was distinguished alike for his great conversational powers and general information. He died at Rome, of dropsy. Besides the works mentioned, he was the author of *The Principles of Surgery,* 3 vols. 4to, 1801–07; new edition, edited by his brother, Sir Charles, 1826. A posthumous work, entitled *Observations on Italy,* edited by Bishop Sandford of Edinburgh, was published by his widow.

BELL, John: 1797–1869; b. near Nashville, Tenn.; was admitted to the bar 1816, elected to the state senate 1817, and member of congress 1827–41, being speaker during one term. He was sec. of war under Pres. Harrison; and U. S. senator for 8 years, commencing 1848. Though he had once been a free-trader, he was in congress an earnest protectionist. He opposed 'nullification,' voted against the U. S. Bank, protested against the removal of the deposits, favored the compromise measures of 1850, but opposed the Kansas-Nebraska bill in 1854, and afterwards also the Lecompton constitution. B. was one of the founders of the whig party, and was the union candidate for president in 1860, receiving the votes of Virginia, Kentucky, and Tennessee.

BELL, John: eminent sculptor, remarkable for rejecting the classical antique model, and following only nature in his works; b. Norfolk, Eng., 1811; d. 1895, Mar. 25; first exhibited at the Royal Acad., London, 1832, a religious group. His works are numerous, and of high and original merit. B.'s statues of Lord Falkland, exhibited in model at Westminster Hall, 1847, and Sir Robert Walpole, 1854, were commissioned for the new Houses of Parliament. One of his best known designs is a monument to the Guards who fell in the Crimea, done 1858. In decorative art, also, he distinguished himself. He was one of the sculptors of the Prince Consort Memorial in Hyde Park, London, which was unveiled 1873. B. wrote a *Free Hand Drawing-book for the Use of Artisans.*

BELL, Lilian, American novelist: b. Chicago, 1867. In 1900 she was married to Arthur Hoyt Boyne, but continues to write under her maiden name. Her writings include *The Love Affairs of an Old Maid* (1893); *A Little Sister to the Wilderness* (1895); *The Under Side of Things* (1896); *From a Girl's Point of View* (1897); *The Instinct of Stepfatherhood* (1898); *As Seen by Me* (1900); *The Expatriates* (1900); *Yessum* (1901); *Abroad with the Jimmies; Hope Loring; Sir John and the American Girl* (1901); *The Dowager Countess and the American Girl* (1903); *The Inter-*

ference of Patricia (1903); *A Book of Girls* (1903); *At Home with the Jardines* (1904); etc.

BELL, Sir Lowthian, English manufacturer and politician: b. Newcastle-on-Tyne, 1816; d. 1904, Dec. 20. He was mayor of his native city 1854–62, sat in the House of Commons for Hartlepool 1875–80, and was made a baronet in 1885. He founded the Clarence Iron Works on the Tees. His publications include *The Chemical Phenomena of Iron Smelting* (1872); *Report on the Iron Manufacture of the United States, and a Comparison of it with That of Great Britain* (1877).

BELL, Nancy R. E. Meugens, English art writer: b. Lambeth, London. Until her marriage to A. G. Bell in 1882 she wrote over the signature N. D. Anvers. She has published *Elementary History of Art; Masterpieces of the Great Artists; Life of Gainsborough; Representative Painters of the 19th Century; St. Antony of Padua; An Old Educational Reformer; J. M. D. Meiklejohn; Memoirs of Baron Le Jeune; Science Ladders Series* (8 vols.); *Raphael· Lives and Legends of the Saints; The Saints in Christian Art;* etc.

BELL, Robert: Irish author and editor: b. Cork, 1800, Jan. 16; d. London, 1867, April 12; educated at Trinity College, Dublin; was editor of *The Patriot*, a government journal, and *The Atlas;* and founded *The Monthly Chronicle,* a literary periodical, 1839. He wrote *The History of Russia, The Lives of English Poets, The Ladder of Gold, Hearts and Altars, Life of Canning, Outlines of China, Memorials of the Civil War, Wayside Pictures through France, Belgium, and Holland,* etc.

BELL, Robert: Canadian geologist; b. Toronto, Ont., 1841, June 3; educated at McGill and Queen's universities; joined in the Canada Geological survey 1867, and made assistant director 1900. During his connection with the survey he made more extensive surveys and explorations than any other man throughout the dominion, especially in the provinces of Quebec, Ontario, and Manitoba, the Northwest Territory, the Mackenzie river region, the shores and country around Hudson bay, the peninsula of Labrador, part of Baffin bay, and the territory s. e. of James bay, where he found an immense region of good soil and lumber. He became a member of the American Institute of Mining Engineers 1861, a Fellow of the Royal Society of Canada 1881, and a member of the Ontario commission which reported on the mineral resources of that province 1888–89.

BELL, Robert Stanley Warren, English writer, editor of the *Captain*: b. Long-Preston, Yorkshire, 1871, June 27. He has published *The Club in Love* (1897); *The Papa Papers* (1898); *Bachelorland* (1899); *Tales of Greyhouse; Love the Laggard* (1901); *Jim Mortimer, Surgeon* (1904); *The Duffer* (1905); etc.

BELL, Samuel, American statesman: b. Londonderry,

N. H., 1770, Feb 9; d. Chester, N. H., 1850, Dec. 23. He passed his boyhood upon his father's farm, graduated at Dartmouth College in 1793, and was admitted to practise law in 1796. He rapidly achieved distinction in his profession, and in 1804 was elected a representative to the State legislature, an office to which he was twice re-elected; and during his last two terms held the position of speaker of the house. He declined the attorney-generalship in 1807, after which he was successively a member of the State senate, and of the executive council, a judge of the supreme court, and 1819 governor of the State. To the latter office he was re-elected four times in succession, till in 1823 he was elected to the senate of the United States, an office to which he was also re-elected. He retired from public life upon the expiration of his second term in 1835.

BELL, Samuel Dana, American jurist: b. Francestown, N. H., 1798, Oct. 9; d. 1868, July 31. He was graduated at Harvard in 1816; studied law in Exeter; and began practice in Meredith. He became a member of the legislature about 1825, and was the clerk of that body for several years. In 1830, 1842, and 1867, he was a member of the commissions appointed to revise the State *Statutes*. In 1855 he was appointed justice of the supreme court of New Hampshire, and in 1859 became chief justice of the court, which office he held till 1864. He joined the New Hampshire Historical Society soon after its organization, and the Manchester Public Library was founded largely through his efforts.

BELL, Thomas: 1792–1880, Mar. 13; b. Poole, Dorsetshire, Eng.; son of a physician; distinguished naturalist. In 1814, he went to London, and studied at Guy's Hospital, and, 1815, passed the College of Surgeons. In 1817, he commenced a course of annual lectures on dental surgery at Guy's Hospital, where he also delivered lectures on comparative anatomy. He was one of the founders of *The Zoological Journal*, of which five vols. were published; also one of the members of the Zoological Club of the Linnæan Soc. afterwards incorporated with the Zoological Soc. Elected in 1828 a Fellow of the Royal Soc., in 1840 he was appointed its secretary. In 1836, he became prof. of zoology in King's College, London. On the establishment of the Ray Society, 1844, for the publication of rare and costly works on natural history, he was elected its first president. In 1853, he was elected pres. of the Linnæan Soc. He was author of a *History of British Reptiles* (1829); a *History of British Quadrupeds* (1836; 2d ed. 1874); and a *History of the British Stalk-eyed Crustacea* (1853). In 1833, he commenced a *Monograph of the Testudinata*, of which only eight parts appeared. The plates were reissued in 1874 with letterpress by Dr. Gray. The articles 'Reptiles,' in Darwin's *Voyage of the Beagle*, was written by Bell. His last work of interest was a new edition of Gilbert White's *Natural History and Antiquities of Selborne* (2 vols. 1878). In 1866, he purchased the

Wakes of Selborne from the grandnieces of Gilbert White; and there he died, March 13, 1880.

BELLA, *bĕl'lâ:* thriving town of Italy, province of Basilicata; pop. between 5,000 and 6,000.

BELLA, Stefano Della: 1610, May 18—1664, July 12; b. Florence: famous Italian engraver. He executed above 1,400 different works, of almost all subjects—battles, sea-pieces, landscapes, animals, etc. All are characterized by freedom and delicacy, and give evidence of high imagination on the part of the author, and of much patient and careful manipulation. One of his most admired works is a view of the Pont-Neuf, Paris.

BELLADONNA, n. *bĕllă'dŏn'nă* [It. fair lady, from its having been used as a cosmetic by ladies—from It. *bella,* beautiful; *donna,* lady]; called also Dwale, or Deadly Nightshade (*Atropa Belladonna*): plant of the nat. ord. *Solanaceæ* (q.v.); herbaceous perennial, growing up every year as a bush, from two to six feet high, with ovate entire leaves, and bell-shaped flowers of a lurid purple color, which are fully larger than those of the common harebell, stalked and solitary in the axils of the leaves. It produces berries, of the size of a middle-sized cherry, and which, when ripe, are of a shining black color, and of a sweetish and not nauseous taste, although the whole plant has a disagreeable heavy smell. It is a native of the s. and middle parts of Europe, cultivated in America, and is not uncommon in the neighborhood of towns and of ruins. All parts of the plant are narcotic and poisonous, and fatal consequences not unfrequently follow from the eating of its berries, which have an inviting appearance. Its roots have sometimes been mistaken for parsnips. Dryness of the mouth and throat, dilatation of the eyes, obscurity of vision, paralytic tremblings, loss of sensation, delirium, and stupor, are among the effects of poisoning by belladonna. When death takes place from this cause, corruption ensues with extraordinary rapidity. B. is, however, of great value in medicine in minute doses, soothing irritation and pain, particularly in nervous maladies, and is administered both internally and externally, in the form of extract, tincture, ointment, and plaster, which are generally prepared from the dried leaves, sometimes from the root. It is particularly useful, from its power of dilating the pupil of the eye, and is constantly employed by oculists both for examinations and operations. It is also applied to the eye to diminish the sensibility of the retina to light.—The name B., i.e. Fair Lady, is supposed to have originated in the employment of the juice for staining the skin. The name Dwale is apparently from the same root with the French *deuil,* grief—an allusion to the same qualities which have obtained for the plant the appellation of Deadly Nightshade. *Atropa* is from *Atropos,* one of the mythologic Fates whose duty it was to cut the thread of life. The other species of *Atropa* are South American.

B. owes its active properties on the animal system to the presence of the alkaloid *Atropine*, accompanied by another alkaloid, *Belladonnine*. The alkaloid atropine is present in all parts of the plant, and in all the preparations. It is generally procured from the root of B., and then forms needle-shaped crystals, which are sparingly soluble in water, but readily dissolve in alcohol and ether. Atropine is a very active poison, and its effects on the animal system resemble in an intensified degree the manner in which B. acts. It has been introduced into medicine, with its nitrate, its sulphate, and its hydrochlorate. See ATROPIA.

BELLADON'NA LILY (*Amaryllis Belladonna*): a very beautiful species of Amaryllis (q.v.), with rose-colored drooping flowers clustered at the summit of the leafless flowering stem. It is a native of the Cape of Good Hope and of the West Indies, has become naturalized in Madeira, and is an ornament of gardens. The flowering stem is about 18 inches high.

BELLAIRE, or BELL AIR, *bĕl-är'*: city in Belmont co., O.; on the w. bank of the Ohio river and on the Baltimore and Ohio, Cleveland and Pittsburg, and the Bellaire Zanesville and Cincinnati railroads; 3 m. s. of Wheeling, W. Va., 137 m. e. of Columbus. It is in a coal, iron, and limestone region; has gas and electric light plants, steel railroads, and water-works, manufactures nails, flint ware, window glass, galvanized ware, pig iron and agricultural implements. It has a national bank and a savings bank, daily and weekly newspapers, and high-grade schools. POP. (1870) 4,033; (1880) 8,025; (1890) 9,934; (1900) 9,912; (1910) 12,946.

BELLAMONT, of BELLOMONT, *bĕl'la-mont*, RICHARD COOTE, Earle of: 1636–1701: he was created earl (1689) because he had assisted to dethrone James II., to make room for William III., Prince of Orange; while, on the contrary, his father had been made peer for helping to restore a disinherited king, Charles II. He was appointed governor of New York in 1695, May, and soon after also of Massachusetts. Being a man of inflexible integrity and resolution, William III. sent him, 1698, to America to suppress piracy and unlawful trade. In Boston he ingratiated himself with the people, checked piracy, and sent the notorious pirate Capt. Kidd to England to be tried and executed (1701). In New York he attacked the unlawful trade so vigorously that the merchants sent a remonstrance to England, and, by their annoyances, caused and hastened his death. His body lies in St. Paul's churchyard, New York, though buried at first at the Battery.

BELLAMY, *bĕl'la-mĭ*, EDWARD: author: b. Chicopee Falls, Mass., 1850; son of the pastor of the Bapt. church in that town. He was educated in Union College, N. Y., and in Germany; studied law and was admitted to the bar; abandoned law for journalism; was editorially connected with the New York *Evening Post* 1871, and the *Springfield Union* 1872–76; and then applied himself

wholly to book literature. His publications include: *A Nantucket Idyll; Dr. Heidenhoff's Process; Miss Ludington's Sister; The Blind Man's World;* and his most celebrated work, *Looking Backward,* which reached its 122d edition 1890, Jan., has been translated into several foreign languages, and has led to the organization of many Nationalist clubs in the United States. He d. 1898, May 22.

BELLAMY, *bĕl'la-mĭ,* JACOBUS: 1757, Nov. 12—1786, Mar. 11; b. Vliessingen (Flushing): distinguished Dutch poet. His parents were very poor, and he was indebted for his education to the patronage of a clergyman, and other friends who subscribed to send him to the Univ. of Utrecht. Here the talents already remarked in B. were given to poetry, though his benefactors had hoped that he would devote himself to theology. His first sentimental and anacreontic poems, published Amsterdam, 1782, were followed by a series of earnest patriotic poems (*Vaderlandsche Gezangen*), and in the same year a third vol. full of merit (1785). A collected edition of his works appeared at Haarlem (1826), but it does not contain his most popular poem, *Roosje.* B. had a glowing spirit and fancy, as well as a fine taste and ease in composition, and ranks as one of the chief restorers of national literature in Holland.

BELLARMINO, *bĕl-lar-mē'nō,* or BELLAR'MINE, ROBERT: 1542, Oct. 4—1621, Sep. 7; b. Monte Pulciano, Tuscany: one of the most celebrated Rom. Cath. theologians. He entered the order of Jesuits, 1560, and was distinguished among his *confrères* by the zeal with which he studied theology, the church-councils, the Fathers, Hebrew, history, and the canon law. In 1563, he gave lessons in polite literature and astronomy at Florence; and in rhetoric, at Mondovi, 1564–67. In his twenty-seventh year, when he went to Louvain as prof. of theology, he began that long controversy with 'heretics' which formed the main business of his life. In 1599, when he was made a cardinal against his own inclination, he used his influence over Pope Clement VIII. to prevent the introduction of the Platonic philosophy into the Univ. of Rome, on the ground of its being 'pernicious;' but though himself a Jesuit, he honorably opposed the Dominicans with regard to the Pelagian writings of Molina. He seems, however, to have participated to some extent in that writer's suicidal ethics, for in his *Disputationes* he argues that, as the pope is the supreme authority in doctrine and morals, if he should call virtue vice, and vice virtue, men are bound to believe him, and to act accordingly. In 1602, he was appointed Abp. of Capua After the death of Clement VIII., he contrived to escape promotion to the papal chair, but was induced by Pius V. (1605) to hold an important place in the Vatican where he remained until his death, which took place in the novitiate-house of the Jesuits. In his work, *De Potestate Pontificis in Temporalibus* (On the Pope's Power in Secular Matters), he introduced the doctrine that the pope must be held as supreme over all kings. On this account, the

book was condemned as treasonable in Paris, Venice, and Mentz. His chief work contains the disputations held in the Jesuits' College at Rome, 1576–81, *Disputationes de Controversiis Fideiadversus hujus Temporis Hereticos* (3 vols., Rome, 1581; 4. vols., Prague, 1721; 4 vols., Mayence, 1842). These disputations are regarded by Rom. Catholics as the best arguments for their tenets. There can be no question of their merits with regard to erudition and adroitness in controversy; but as Gerhard, in his *Bellarminus Orthodoxiæ Testis* (Jena, 1631–33), and Dallæus have shown, many of the conclusions are far from being sound or logical. Industry, clearness, and acuteness are the chief merits of B.'s great work; but it is seriously lessened in value by subtlety, forced conclusions, and a very defective exegesis—faults which have long been evident to enlightened Rom. Cath. writers themselves. Among his other writings, the most able is the *Christianæ Doctrinæ Applicatio*, originally written in Italian, and now translated into all the European languages. Pope Urban VIII., at the instigation of the Jesuits, declared B. to be a 'faithful servant of God;' but his canonization as a saint has hitherto been opposed. Complete editions of his works have been published at Venice, 5 vols., 1721; and Cologne, 7 vols., 1619. His life was written in Italian by the Jesuit Fuligatti (Rome, 1624); and translated into Latin by Petra Sancta (Liege, 1626).

BELLARY, *bĕl-lâ'rē:* district of British India in the presidency of Madras; bounded on the n. by the Nizam's territories, on the e. by Cuddapah, on the s. by Mysore, and on the w. by Dharwar; 5,904 sq. m.; in n. lat. between 13° 40′ and 15° 58′; and in e. long. between 75° 44′ and 78° 19′. The peculiarities of the district are connected with its situation. Screened by the Ghauts from the s.w. monsoon, and protected against the n.e. one by its distance from the Bay of Bengal, B. receives, on an average, less rain than any other portion of southern India—the annual fall ranging between about 12 inches and about 26 inches. Hence all its subordinate streams become, in the dry season, mere expanses of sand, which, excepting when bound together by the growth of the nuth-grass, is apt to encroach from year to year, like a glacier, over the bordering grounds. B., in fact, may in a great measure be said to be habitable through artificial means. Irrigation, though rude, is yet ingenious; dug wells amount to 22,000; of tanks there are 1,400; and weirs or dams of huge stones, to the number of 331, cross the various water-courses, so as to form, after the rains, so many reservoirs. Pop. 1,652,044.

BELLA'RY: chief town of the dist. of B.; about 380 m. s.e. of Bombay, and 305 n.w. of Madras; lat. 15° 8′ n., and long. 76° 57′ e. As one of the principal military stations in the presidency of Madras, it is connected by good roads with Belgaum, Bangalore, Hyderabad, and by rail with Madras. The fort, crowning a rock two m.

round, and 450 ft. high, is supplied with water from tanks excavated in the solid granite. Besides the fort and adjacent cantonments, B. comprises a native town. It was ceded to England in 1800. Pop. 57,700.

BELL'-BIRD (*Casmarynchus carunculata*): a bird found in some of the warm parts of S. America, remarkable for the metallic resonance of its cry, which resembles the tolling of a bell, with pauses varying from a minute to several minutes. This bird belongs to a genus nearly allied to the Cotingas (q.v.) and Wax-wings (q.v.), but characterized by a very broad and much depressed bill, soft and flexible at the base, and hard towards the extremity. It is about the size of a jay; the male is of snow-white plumage, and from his forehead rises a strange tubular appendage, which, when empty, is pendulous, but which can be filled with air by a communication from the palate, and then rises erect to the height of nearly three inches.

BELLEFONTAINE, *bĕl-fŏn'tān:* cap. of Logan co., O., on the highest ground in the state, 113 m. n.n.e. of Cincinnati, 50 m. n.w. of Columbus. Two of the principal railroads, one running n. and s., and the other e. and w., connect it with business centres in all directions. It has court-house, banks, several newspapers, numerous churches, a union school, and manufactures of bridges, railroad cars, carriages, and woolen goods. Pop. (1880) 3,098; (1890) 4,245; (1900) 6,649; (1910) 8,238.

BELLEGARDE: a hill-fortress of France, in the dept. of Pyrénées Orientales; on the Spanish confines on the road from Perpignan to Figueras, in the pass between Col de ertuis on the e., and Col de Panizas on the west. Here the French, under Philip III., were defeated by Peter III. of Arragon, 1285. In the 14th c., B. consisted only of a fortified tower. It was captured by the Spaniards, 1674, and again by the French under Marshal Schomberg, 1675. After the peace of Nimeguen, 1678–9, a regular fortress, with five bastions, was erected here by order of Louis XIV. In 1793, it was blockaded and taken by the Spaniards under Ricardos, but was retaken by the French in the following year.

BELLE ISLE, *bĕl īl:* island in the Atlantic, about midway between the n.w. of Newfoundland and the s.e. of Labrador, lat. 52° n., and long. 56° west. Although on the parallel of Essex in England, it yields little but potatoes and ordinary vegetables. It is known chiefly as giving name to the adjacent strait on the s.w., 70 m. long and 11 m. wide, which, separating Labrador from Newfoundland, forms the most northerly of the three channels between the Gulf of St. Lawrence and the open ocean.

BELLEISLE-EN-MER, *bĕl-ēl'ong-mār:* an island belonging to France in the dept. Morbihan; in the Atlantic, 8 m. s. of Quiberon Point; length 11 m., greatest breadth 7. The inhabitants are engaged chiefly in pilchard-fishing. Salt is made on the island. The chief town is

Palais, a seaport and fortified place. In the 9th c., B. came into possession of the Count of Cornouailles, who bestowed it on the abbey of Redon, afterwards on the abbey of Quimperlé. In the 16th c., the monks of Quimperlé ceded the island to Charles IX., who gave it as a marquisate to the Marshal de Retz, who fortified it. His successor sold the island, 1658, to Fouquet, intendant of finance, who further improved and strengthened it. His grandson, the celebrated Marshal Belleisle, ceded the island to Louis XV. in exchange for the comté Gisors, 1718. In 1761 it was captured by the English fleet under Keppel, and restored in 1763. Pop. about 10,000.

BELLEISLE, *bĕl-ēl*, Charles Louis Auguste Fouquet (Comte de), marshal of France: b. Villefranche, 1684, Sept. 22; d. Versailles 1761, Jan. 26. He distinguished himself during the famous siege of Lille, and became brigadier in the royal forces. After the conclusion of the war of the Spanish Succession he went with Marshal Villars to Rastadt, where he displayed diplomatic talents. The cession of Lorraine to France in 1735 was principally his work. Cardinal Fleury reposed confidence in him; Louis XV. made him governor of Metz and the three bishoprics of Lorraine, which office he held until his death. Before the breaking out of the war in 1741 he visited the principal courts of Germany with the design of disposing them, after the death of Charles VI., to choose the elector of Bavaria emperor of Germany; and he displayed so much address on this occasion as to excite the admiration of Frederick II. After his return he placed himself at the head of the French forces sent to oppose those of Maria Theresa. He took Prague by assault; but, the king of Prussia having made a separate peace, he was compelled to a retreat which he performed with admirable skill. In 1744, December, when on a diplomatic journey to Berlin, he was arrested in Germany and sent to England, but he was exchanged in 1746. In the following year he forced Gen. Browne, who had entered the south of France from Italy, to raise the siege of Antibes and to retreat over the Var. In 1748 the king made him a duke and peer of France, and the department of war was committed to his charge. He reformed the army by abolishing many abuses, enlarged the military academy, and caused an order of merit to be established.

BELL, Electric: a call or alarm bell operated by electric current. See Electrical Communication, Systems of.

BELLENDEN, *bĕl'ĕn-den* (Ballantyne) John, Archdeacon of Moray: d. abt. 1550: Scottish writer in the reigns of James V. and Queen Mary; born towards the close of the 15th c., somewhere in the e. of Scotland, for in the records of the Univ. of St. Andrews he is entered thus: '1508, *Jo. Ballentyn nac. Laudoniæ.*' He completed his education at the Univ. of Paris, where he took the degree

of D.D. B. is remembered by his translation of Boece's *Scotorum Historia*, and of the first five books of Livy (both done in 1533), interesting as specimens of the Scottish prose of that period, and remarkable for the ease and vigor of their style To both of these works are prefixed poetical *prohemes* or prologues. B.'s *Croniklis of Scotland* professes to be a translation of Boece, but it is very free, and contains numerous passages not to be found in the original, so that it is in some respects almost an original work. The author was in great favor for a long time at the court of James, at whose request he executed the translations. As the reward of his performances, he received grants of considerable value from the treasury, and afterwards was made Archdeacon of Moray and Canon of Ross. Becoming involved, however, in ecclesiastical controversy, he left his country, and, according to Bale and Dempster, went to Rome, where he died. The translation or 'traductioun' of Livy was first published 1822 by Mr. Thomas Maitland (afterwards Lord Dundrennan), uniform with his edition of the *Croniklis* in the previous year (Edin., 2 vols. 4to).

BELLENDEN, WILLIAM: Scottish author in the time of Queen Mary and James VI. His personal history is meagre and obscure; all that is known being the testimony of Dempster (*Hist. Eccl.*), that he was a prof. in the univ., and an advocate in the parliament of Paris, and that he was employed in that city in a diplomatic capacity by Queen Mary, and by her son, who conferred on him the appointment of Master of Requests. His first work, entitled *Ciceronis Princeps*, etc., was pub. Paris, 1608; his next, *Ciceronis Consul, Senator, Populusque Romanus*, 1612 Both are compilations from the writings of Cicero. His next work, *De Statu Prisci Orbis*, appeared 1615, and consists of a condensed sketch of the history and progress of religion, government, and philosophy, in ancient times. These three works he republished in a collected form the year after, under the title *De Statu, Libri tres.* His crowning labor, *De Tribus Luminibus Romanorum*, was published after his death. The 'three luminaries' were Cicero, Seneca, and Pliny, out of whose works he intended to compile, on the same plan as his previous works, a comprehensive digest of the civil and religious history, and the moral and physical science of the Romans. The first of these only was completed, and forms a remarkable monument of B.'s industry and ability. 'B.,' says Mr. Hallam, 'seems to have taken a more comprehensive view of history, and to have reflected more philosophically on it than perhaps any one had done before.' B.'s works furnished the materials for Dr. Middleton's *Life of Cicero*, though that learned divine abstains from any allusion to the forgotten Scot from whom he plundered wholesale. Warton first denounced the theft, which was afterwards made clear by Dr. Parr in his edition of the *De Statu, Libri tres*, 1787.

BELLEROPHON, n. *bĕl-lĕr'ō-fŏn* [from *Bellerophon*, a

fabulous hero of antiquity]: genus of univalve shells, known only as a fossil. Montfort, who established the genus, placed it among the chambered *Cephalopoda*. It was subsequently associated with the living Argonaut, but is now generally considered as a genus of De Blainville's *Nucleobranchiata* (q.v.), having as its nearest ally

Bellerophon Tangentialis.

the genus *Atalanta;* from which, however, it differs in having a strong shell. The shell of the B. is symmetrically convolute, with few and occasionally sculptured whorls, globular or discoidal, and having a dorsal keel, which terminates in a deep notch in the sinuous aperture. It is a palæozoic organism, extending from the lower silurian to the carboniferous series. Seventy species have been described.

BELLEROPHON, *bĕl-lĕr'ō-fŏn* (originally called HIPPONOUS): fabulous hero of antiquity; son of the Corinthian king Glaucus, and Eurymede, dau. of Sisyphus. Other accounts make Neptune his father. Having acccidentally killed his brother, B. fled to his relative Prœtus, King of Argos, by whom he was hospitably received and protected; but Anteia, the spouse of Prœtus, having become enamored of him, and he, like Joseph, having declined her overtures, she revenged herself after the manner of Potiphar's wife. This induced Prœtus to send his guest away to Iobates, King of Lycia, to whom B. carried a sealed message. After being entertained nine days at the court of Lycia, B. delivered the letter, which contained a request that Iobates would cause the youth to be slain. This, however, Iobates was reluctant to do in a direct way, as B. was his guest. He consequently imposed upon B. the seemingly impossible task of slaying the formidable Chimæra (q.v.). B., mounted on the winged steed Pegasus (given to him by Pallas), ascended into the air, and succeeded in slaying the monster with his arrows. Afterwards, he was sent by King Iobates against the Amazons, whom he defeated. On his way home he destroyed an ambuscade of Lycians, which Iobates had set for his destruction. That monarch now thought it useless to attempt his death, and, as a sort of recompense, gave the hero in marriage his daughter Philonoë, by whom he had three children—Isander, Hippolochus, and Laodameia: such at least is the story as told by Apollodorus, who here concludes. Homer relates that he at last drew on himself the hatred of the gods, and wandered about in a desolate condition through the Aleïan field. Pindar relates that B. on Pegasus endeavored to mount to Olympus, when the steed, maddened by Jove through the agency of a

gadfly, threw his rider, who was stricken with blindness. B.'s adventures were a favorite subject of the ancient artists. Sculptures have recently been discovered in Lycia which represent him vanquishing the Chimæra.

BELLES-LETTRES, n. plu. *bĕl-lĕt'tr* [F.]: a term adopted from the French into the English and various other languages. It is generally used in a vague way to designate the more refined departments of literature, but has in fact no precise limits. In English usage it is synonymous with another vague expression, *polite literature*, including history, poetry, and the drama, fiction, essay, and criticism. It signifies also in *Rhetoric* the rules of elegant composition.

BELLEVILLE, *bĕl'vĭl:* cap. of St. Clair co., Ill.; on high ground, about 15 m. s.e. of St. Louis, 110 m. s.s.w. of Springfield. More than half a dozen important railroads connect it with trading-points in all directions. It has several churches, a convent, St. Peter's Cathedral, flour-mills, breweries, and manufactures of iron, steam-engines, threshing-machines, drills, etc. The population is largely German. There are German daily and weekly newspapers, also English weekly papers. It has rich and accessible mines of bituminous coal. Pop. (1880) 10,682; (1900) 17,484; (1910) 21,122.

BELLEVILLE, Canada, town, port of entry, and county-seat of Hastings Co., Ontario, on the Bay of Quinte, at the mouth of the Moira River. It is on the Grand Trunk Railway and 60 miles west of Kingston. It has an excellent harbor, and the Moira affords abundant water-power for manufacturing. Belleville is in the heart of the finest dairying region of Canada; is in direct steamboat communication with many Canadian and United States points, and enjoys an extensive trade, especially in lumber. It has 13 churches. It is the seat of Albert College, which has an arts course, music, etc., and was established in 1857. The Ontario Business College, Belleville Business College, Saint Agnes Ladies' School, public and high schools, deaf and dumb institute, and public library are some of its institutions. The chief manufactories are lumber, pottery, cigars, sash and blinds, woolens, shirts, mining tools, machinery, lanterns, and tinware. A short distance east of Belleville are large cement works for the utilization of a limestone which exists in great abundance in the vicinity. The city has agencies for the principal banks of Canada, daily and weekly newspapers, and is the seat of a United States consulate. Pop. (1901) 9,117.

BELLEVILLE, *bĕl-vēl':* town of France, in the dept. of the Seine, forming a suburb of Paris, and inclosed by the new fortifications. It has manufactories of cashmeres, varnished leather, articles of polished steel, chemical stuffs, etc. There are springs at B. which have supplied Paris with water from a very early date, and it has tea-gardens and other resorts for the Parisians.

BELLEW, Francis Henry Temple: artist: 1828–1888;

b. in the E. Indies; believed to be descendant from a family in the Irish peerage. He was educated in England, developed unusual ability as an artist and after settling in New York, shortly before the civil war, became well known as a clever artist, especially in caricature.

BELL'-FLOWER: see CAMPANULA.

BELLIBONE, n. *bĕl'ĭ-bōn* [F. *belle*, beautiful; *bonne*, good]: in *OE.*, a fair maid; a woman beautiful and good.

BELLICOSE, a. *bĕl'lĭ-kōz'* [L. *bellicōsus*, very warlike—from *bellum*, war]: inclined to war; over-warlike.

BELLIGERENT, a. *bĕl-lĭj'ĕr-ĕnt* [L. *bellum*, war; *gĕren'-tem*, carrying on]: waging war; carrying on war: N. a nation or state having a right to carry on war: a party or a power recognized by other nations as carrying on regular warfare, in contradistinction to *rebels*.

BELLINGHAM, *bĕl'ĭng ăm*, RICHARD: royal governor of Massachusetts: b. 1592; d. 1672, Dec. 7. He emigrated to the colony in 1634; in 1635 was made deputy-governor; and in 1641 was elected governor in opposition to Winthrop by a majority of six votes. He was re-elected in 1654, and after the death of Endicott was chosen again in 1665, May, and continued in the executive chair of the colony as long as he lived, having been deputy-governor 13 and governor 10 years. He was chosen major-general in 1664, in which year the king sent Nichols, Cortright, Coon, and Moresick as commissioners to inquire into the state of the colony, when, according to Hutchinson, Bellingham and others obnoxious to Charles II. were required to go to England to account for their conduct. The general court, however, refused obedience and maintained the authority of the charter. His wife having died, in 1641 he married a second time, of which a contemporary speaks thus: 'A young gentleman was about to be contracted to a friend of his, when on a sudden the governor treated with her, and obtained her for himself.' The banns were not properly published, and he performed the marriage ceremony himself. He was prosecuted for a violation of the law, but at the trial he refused to leave the bench, sat and tried himself, and thus escaped all punishment. In his last will he provided that after the decease of his wife and of his son by a former wife, and his granddaughter, the bulk of his estate should be spent for the yearly maintenance 'of goodly ministers and preachers' of the true Church, which he considered to be that of the Congregationalists. This will the general court set aside on the ground that it interfered with the rights of his family. A sister of his, Anne Hibbens, was executed at Salem in 1656, June, during the witchcraft persecution.

BELLINGHAM, Wash., city, county of Whatcom; on the eastern shore of Bellingham Bay, and on the Great Northern, Northern Pacific, Canadian Pacific, and Bellingham Bay & British Columbia R.R.'s.

History.—The first settlement was made in 1852, Oct. by Capt. Henry Roeder, who built a saw-mill on

what is now Whatcom Creek. The Lummi tribe of Indians maintained their chief camp on the beach near the mouth and falls of Whatcom Creek, and called the camp or rather the locality '*Whrap-cop*,' meaning 'the noisy water' or 'the place of the noisy water.' The white men retained the Indian name for their town, modified as indicated by the spelling to Whatcom. This remained the name of the town until the consolidation of Whatcom and New Whatcom in 1891 under the name of New Whatcom, from which the prefix 'New' was dropped by action of the state legislature, 1901, Feb. 19. Fairhaven is the English interpretation of an Indian word or phrase, '*See-see-leechel*,' meaning 'a safe harbor' or 'the sheltered beach.' The town was platted, and named in 1883 by Daniel J. Harris, the original donation claimant. In 1890 Fairhaven and the adjoining town of Bellingham were incorporated as one city under the name of Fairhaven. On 1903, Oct. 27, the electors of Fairhaven and Whatcom voted to consolidate the two cities under the name of Bellingham and the consolidation was duly consummated. The new name went into effect, 1903, Dec. 28, and the post-office became Bellingham, 1904, April 1. Bellingham Bay was named by Vancouver in 1792, and the consolidated city takes its name from that bay.

Industries.—The city is the commercial centre of a large lumber and agricultural region; salmon fishing is also an industry of great importance, and mining and quarrying are carried on in the vicinity. The principal manufacturing establishments include lumber and shingle mills, salmon canneries, wood working and iron working plants, and brick kilns. There are four banks with a combined capital of $405,000.

Churches and Educational Institutions.—There are 27 established churches in Bellingham, representing practically all denominations. There are 11 city schools, including a high school, and two libraries, the Bellingham Bay Library, and the Carnegie Library. The city also contains the State Normal School, and three business colleges.

Government and Population.—The government is vested in a mayor, elected biennially, and a council of seven members, elected alternately every two years. Pop. (1910) 24,298.

BELLINI, *bĕl-lē'nē:* name of a Venetian family which produced several remarkable painters. The earliest was JACOPO B.; died 1470: pupil of the celebrated Gentile da Fabriano, and one of the first who painted in oil. His eldest son, GENTILE B., 1427-1507, was distinguished as a portrait-painter, and also as a *medailleur*. With his brother, he was commissioned to decorate the council-chamber of the Venetian senate. Mohammed II., having by accident seen some of his works, invited Gentile to Constantinople, employed him to execute various historical works; and dismissed him laden with presents. The *Preaching of St. Mark* is his most famous achievement. His more celebrated brother, GIOVANNI B., 1427-1516,

was the founder of the older Venetian school of painting, and contributed greatly to its progress. His works are marked by naïveté, warmth, and intensity of coloring. His best works are altar-pieces. His picture of the *Infant Jesus* slumbering in the lap of the Madonna, and attended by angels, is full of beauty and lively expression. His *Holy Virgin, Baptism of the Lord,* and *Christ and the Woman of Samaria,* also are much admired. Among his numerous pupils the most distinguished were Giorgione and Titian.

BELLI'NI, VINCENZO: 1802, Nov. 3—1835, Sep. 24; b. Catania, Sicily; popular modern opera composer. He received his early education at the Conservatory of Naples, and was subsequently instructed in composition by Tritto and Zingarelli. After making some attempts, without much success, in instrumental and sacred music, he brought out, 1825, the opera *Adelson e Salvina,* which was played in the small theatre of the Royal College of Music (Naples). Another opera, *Bianca e Fernando,* was given in the theatre St. Carlo (1826) with such success that, in 1827, Bellini was commissioned to write a piece for La Scala at Milan. This opera, *Il Pirata,* was the first which carried the composer's name beyond Italy. It was followed with equal success by *La Straniera,* 1828, and by *I Capuleti ed i Montecchi,* written for the theatre of Venice, 1830, which was the culmination of the fame of B., though it by no means exhausted his productive powers. *La Sonnambula* and *Norma* appeared in 1831, and *Beatrice di Tenda* in 1833. In the same year the composer went to Paris, where he became acquainted with other forms of music besides the Italian. He was received with great applause in London, and after his return to Paris, wrote his opera *I Puritani,* which shows the influence of the French school of music, but without servile imitation. At an early age the career of B. was interrupted by death, at Puteaux, near Paris, before the composer had fully developed his powers. He was the most genial and original of all the followers of Rossini, and though inferior to his master in exuberance of fancy, is superior in carefulness and finish, especially in the due subordination of instrumental decorations to vocal melody. See Pougin, *B., sa Vie, ses Œuvres* (Par. 1868), and Hiller's *Künstlerleben* (Cologne, 1880).

BELLINZONA, *bĕl-lĭn-zō'nâ,* or BEL'LENZ: town of Switzerland, canton of Tessin or Ticino, on the left bank of the river of that name, seat of the provincial government, alternately with Lugano and Locarno. It is guarded by three old castles, and completely commands the passage of the valley in which it is situated. In former times, it was considered a place of great military importance, and was the scene of frequent conflicts between the Italians and Swiss; the latter of whom finally made themselves masters of it about the beginning of the 16th c. As an entrepôt for the merchandise of Germany and Italy, it is

now a place of considerable commercial importance, though the pop. is but 3,000.

BEL'LIS: see DAISY.

BELLON, n. *bĕl'lŭn:* in *med.*, a kind of colic produced by lead poisoning; lead colic. It is attended by severe griping of the intestines.

BELLONA, n. *bĕl-lō'na* [L. *bellona*, formerly *duellona*—from *bellum*, war]: the goddess of war; an asteroid, the 28th found.

BELLONA, *bel-lō'na:* the goddess of war among the Romans, described by the poets as the companion, sister, wife, or daughter of Mars; she was also represented as armed with a bloody scourge, and as inspiring her votaries with a resistless enthusiasm in battle. In the war with the Samnites, the consul Appius Claudius vowed a temple to B., which was erected afterwards on the field of Mars. In this temple the senate gave audience to embassies from foreign powers, and also to consuls who had claims to a triumph which would have been nullified by entrance into the city. The priests of the goddess were styled *Bellonarii*, and practiced sanguinary rites; such as cutting their own arms or feet, and offering (or even drinking) the blood in sacrifice. This was especially done on the *dies sanguinis* (day of blood), March 20.

BELLOT, *bā-lō'*, JOSEPH RENÉ: 1826, Mar. 18—1853, Mar. 21; b. Paris: lieut. in the French navy, who perished in the arctic regions, in search of Sir John Franklin. He was educated at Rochefort, in the naval school. In the French expedition against Tamatave, 1845, he showed such courage and presence of mind, that the cross of the Legion of Honor was conferred on him before his twentieth year. In 1851, May, he joined the expedition then preparing in England for the polar regions, in search of Sir John Franklin, and sailed in the *Prince Albert*, Kennedy commander, sent out by Lady Franklin. Distinguished by noble daring, he took part in several explorations. In one of these he made an important geographical discovery. Bellot Strait (q.v.). On his return, he was promoted to the rank of navy lieut. In the expedition fitted out by the British admiralty, under Captain Inglefield, he sailed as a volunteer, in H.M.S. *Phœnix;* but never returned, having been carried by a violent gust of wind into a deep crack in the ice on which he was traveling. His *Journal of a Voyage to the Polar Seas made in Search of Sir John Franklin in* 1851–1852, edited, with a notice of his life, by M. Julien Lemer, 2 vols., was published at Paris in 1854. English translation, London, 1855.

BELLOT STRAIT: the passage which separates North Somerset from Boothia Felix, and connects Prince Regent's Inlet with Peel Strait or Sound, or, in M'Clintock's new nomenclature, Franklin Channel. Its e. entrance was discovered by Kennedy during his search for Franklin, and he, assuming the continuity of the opening,

classified it accordingly naming it after his lamented companion Bellot. After four unsuccessful attempts, it was explored for the first by M'Clintock. It is about 20 m. long, and, at its narrowest part, about a mile wide, running nearly on the parallel of 72°, between granite shores which, everywhere high, rise here and there to 1,500 or 1,600 ft. Through this funnel both the winds and the waters have full play; the latter, permanent currents and flood-tides alike, coming from the w. To the most n. point on the s. shore, M'Clintock has given the name of Murchison Promontory. See BARROW CAPE or POINT.

BELLOW, v. *bĕl'lō* [AS. *bellan*, to sound loudly: Gael. *beul*, a mouth]: to make a loud noise; to cry out lustily; to roar loudly as an enraged bull: N. a loud shout; a roar. BELLOWING, imp.: ADJ. roaring loudly: N. a loud noise, as the roaring of a bull. BELLOWED, pp. *bĕl'lōd*. BEL'LOWER, n. one who.

BELLOWS, n. plu. *bĕl'lōz* or *bĕl'lŭs* [AS. and Sw. *baelg*, a bag or pouch: Gael. *balg*, a leather bag: mid. L. *bulga*, a womb or belly]: a form of blowing mechanism used for many hundreds of years, consisting of two flat bell-shaped frames, hinged at the small end and connected to a nozzle. The sides of these frames are joined with thin leather or the like, and valves of simple form are introduced so that when the frames are drawn apart air rushes in at the side-valve, and when the frames are pressed together, the side-valve closes, and the other valve at the nozzle opens, and air is forced out. B. were first used by smiths for blowing their fires. They are common in organs. See BLOWING-MACHINES.

BELLOWS, HENRY WHITNEY, D.D.: 1814, June 11—1882, Jan. 30; b. Boston. He studied at Harvard Univ., where he graduated 1832, and at the Divinity School at Cambridge 1837. He was ordained pastor of the First Unitarian Congl. Church of New York, 1839, Jan. 2. He was greatly in demand as a lecturer on social questions and for extemporary speeches on important public occasions.

Dr. B. was a man of lovable spirit; fine culture, and large attainments, and was a constant writer for the press. In 1846 he founded the *Christian Enquirer*, a weekly Unitarian paper, to which he was the principal contributor for four years. He was an associate editor of the *Christian Examiner* and the *Liberal Christian*. During the war of the Rebellion he was pres. of the U. S. Sanitary Commission, of which he was the leading organizer, and whose vast affairs he administered with a degree of ability which commanded the respect of the government officials and noted financiers with whom he was brought into close and constant relation through the expenditures of the millions of money contributed to the Commission. He filled this office from 1861 till 1878, during which time he directed the distribution of $15,000,000 worth of supplies and the expenditure of $5,000,000 in money.

BELLOWS-FISH: see TRUMPET-FISH.

BELLOY, *bā-lwă'*, PIERRE LAURENT BUIRETTE: 1727, Nov. 17—1775, Mar. 5; b. St. Flour, Auvergne: one of the first French dramatists who ventured to introduce on the stage native, instead of Greek, Roman, or other outlandish heroes. Educated by his uncle for the law, he turned to the drama, leaving his home, and acting in various places under the name of Dormont de B. For some years he resided at St. Petersburg, where the Empress Elizabeth interested herself in him. In 1758, he returned to France, to superintend the 'bringing out' of his tragedy *Titus*, trusting that its success would reconcile his family to him. In this he was disappointed, for the piece proved a failure, being only a feeble imitation of *Metastasio*, and he returned to St. Petersburg. After the death of his uncle, he again visited France, and obtained a decided success by his tragedy of *Zelmire*. In 1765 appeared *Le Siége de Calais*, which was immensely popular, and is even yet held in estimation; and in 1771, *Gaston and Bayard*, which secured for him an entrance into the French Acad. But his production which has longest retained a place in the *répertoire* of the stage, though it was far from popular at first, is *Pierre le Cruel*. B.'s dramas are not wanting in theatrical effectiveness, but are marred by great incorrectness. They have been collected and edited by Gaillard (6 vols., Par. 1779).

BELL ROCK, or INCH CAPE: a reef of old red sandstone rocks in the North Sea, 12 miles s.e. of Arbroath, and nearly opposite the mouth of the Tay. The reef is 2,000 feet long; at spring-tides part of it is uncovered to the height of four ft. and for 100 yards around the sea is only three fathoms deep. It was formerly a fruitful cause of shipwreck, and, according to tradition, the abbot of Aberbrothwick (Arbroath) placed a bell on it, 'fixed upon a tree or timber, which rang continually, being moved by the sea, giving notice to the saylers of the danger.' This tradition has been embodied by Southey in his well-known ballad of *The Inchcape Rock*.

BELLS, on shipboard: term having a peculiar meaning, not exactly equivalent to, but serving as a substitute for 'time,' or 'hour,' 'o'clock,' in ordinary land-life. The day, or rather the night, is divided into 'watches,' or periods, usually of four hours' duration each; and each half-hour is marked by striking on a bell. The number of strokes depends, not on the hour, according to ordinary reckoning, but on the number of half-hours which have elapsed in that particular watch. Thus, 'three bells' is a phrase denoting that three half-hours have elapsed, but it does not in itself show to which particular watch it refers. A ship's bell is usually hung to the beam of the forecastle.

BELLUR: large town in the territory of Mysore, India, 40 m. n. from Seringapatam, with a fort, which has a strong mud rampart and ditch. The town itself was formerly protected by a similar rampart, which is now ruin-

ous.—Another town of the same name, also in Mysore, is 60 m. w.n.w. from this, a mile from the w. bank of the river Yagachi, or Bhadri, one of the head-waters of the Cavery.

BELLY, n. *bĕl'lĭ* [AS. *baelg*, a bag: Dut. *balg*, a belly (see BELOWS)]: that part of the body of an animal which contains the bowels; that part of a thing which swells out; a hollow place or cavity: V. to fill or swell out; to become protuberant. BEL'LYING, imp. BELLIED, pp. *bĕl'lĭd:* ADJ. puffed up; swelled. BELLYFUL, n. *bĕl'lĭ-fûl*, as much as fills the belly. BELLY-ACHE, n. *bĕl'lĭ-āk*, pain in the bowels. BELLY-BOUND, very costive; constipated. BELLY-BRACE, in *mach.*, a cross brace stayed to the boiler between the frames of a locomotive. BELLY-ROLL, a roller of which the middle part is protuberant. It is used to roll land between the ridges or in hollows.

BEL-MERODACH: see MERODACH.

BEL'MONT, AUGUST: 1816, Dec. 6—1890, Nov. 24; b. Alzey, Germany: banker. Educated at Frankfort, he was apprenticed to the Rothschilds when 13 years old, appointed their agent in Italy 1833 and Cuba 1837, and opened a banking-house in New York the latter year. From 1844–50 he was consul-gen. at New York for the Austrian govt. In 1849 B. married a niece of Com. Perry (hero of Lake Erie), the daughter of Matthew C. Perry, commander of the Japan expedition of 1853. In 1853 he was appointed U. S. *chargé d'affaires* at The Hague, and 1854 minister resident, which position he resigned 1858; and has since been American correspondent for the house of Rothschild Bros., conducting at the same time a general banking business. He was a delegate to the democratic convention 1860, and during the next 12 years was chairman of the national democratic committee. He was pres. of the American Jockey Club for 20 years.

BELMONT, BATTLE OF: at Belmont, Mississippi co., Mo., opposite Columbus, Ky.; 1861, Nov. 7; between the Union forces under Gen. Grant and the Confederates under Gen. Pillow. On the day previous Columbus was occupied by a strong Confederate force under Gen. Polk, and Gen. Grant was in command at Cairo. During the night a Union force of nearly 4,000 men was sent down the Mississippi river to a point 10 m. above Columbus, and the next morning it was moved forward to capture the Confederate camp. The camp was carried by a charge, and all its supplies, ammunition, and baggage, were burned. At the moment of victory the Confederates were reinforced from Columbus, and in turn drove the Union troops back to their boats.

BELMONT, PERRY: lawyer: b. New York, 1851, Dec. 28: son of August B. He graduated at Harvard 1872, and at the Columbia College Law School 1876. He was admitted to the bar, and practiced in New York till 1881, when he was elected to congress as a democrat, and

served there by reëlections till 1888, Nov. In 1885–88 B. was chairman of the committee on foreign affairs, and member of the committee on expenditures in the state dept. 1887, Nov., he was appointed U. S. minister to Spain, and 1890, Mar., received from the pres. of France the decoration of commander of the Legion of Honor, for his services during the last Paris Exposition.

BELOIT *bĕ-loyt'*: a city of Wisconsin, on Rock river, on several lines of railways, 85 m. s.w. of Milwaukee, built on two plains, one 70 ft. above the other, with broad shaded streets, groves, and handsome residences. It has a college, some fine churches, several flour and paper mills, foundries, and manufactories of agricultural implements, etc. Pop. (1910) 15,125.

Beloit College (Congl.), chartered 1846, opened 1847, had (1910) 81 professors and instructors, over 400 students, 4 years' college course, about 42,000 vols. in library, scientific apparatus valued at $15,000, grounds and buildings, $335,000; permanent productive funds, $420,000; income therefrom, $28,000. The college grounds comprise 25 acres, the larger part of which was a gift from the city of Beloit; and there are 8 buildings, all of which are on a beautiful bluff on the e. side of Rock river. The college has an observatory, containing a telescope of superior power; an equipment of 13 microscopes; and an excellent gymnasium. In 1889 friends of the college subscribed $200,000 for the further development of its usefulness.

BELOMANCY, n. *bĕl'ō-măn'sĭ* [Gr. *belos*, an arrow; *mantei'ă*, divination]: a kind of divination among the Arabians, etc., by shooting arrows inscribed with names, or drawn as lots, and then consulting the inscription on the first arrow found or drawn. See Axinomancy: Divining-rod.

BELON, *bė-lōng'*, Pierre: 1517–64, Apr.; b. Soulletière, dept. of Sarthe: French naturalist. He studied medicine at Paris and travelled through Germany, and in 1546 through Greece, Asia Minor, Egypt, and Arabia. He returned 1549, and in 1553 published *Observations on several Singular and Memorable Things discovered in Greece, Asia, Judæa, Egypt, Arabia, and other Foreign Countries.* He was murdered by robbers when gathering herbs at night in the Bois de Boulogne. B. published other treatises, the following: in 1551, *A Natural History of the Strange Sea-fish, with a correct Representation and Account of the Dolphin, and several others of that Species,* which contains an exact description of the dolphin, and the earliest picture of a hippopotamus in any European book; in 1555, *A Natural History of Birds,* often quoted by Buffon, and acknowledged the most important treatise on ornithology of the 16th c.; in 1558, an elaborate and interesting work on Arboriculture.

BELONE: see Garfish.

BELONG, v. *bĕ-lŏng'* [Dut. *belangen*, to attain to, to con-

cern; Ger. *gelangen,* to arrive at]: to be the property of or business of; to be an inherent quality of; to be related to or connected with; to have a residence in. BELONG'ING, imp. BELONGED, pp. *bĕ-lŏngd'*. BELONG'INGS, n. plu. those things which pertain to one, as qualities or endowments; usually said of goods, chattels, property, but sometimes applied to mental and moral qualities, faculties, talents, etc., and even to one's relations, the members of one's family or household.

BELONID, n. *bĕl'ō-nĭd* [Gr. *belone,* needle; ending *id,* denoting family]: member of the *Belonidæ* fam. of fishes. BELON'IDÆ, n. plu. fam. of fishes of which *Belone* is the type genus. The Amer. gar-fish belong to the genus *Tylosurus,* family *Exocœtidæ,* which now takes the place of *Belonidæ and Scombresœidæ,* in Jordan's *Manual of Vertebrates.* BEL'ONOID, a. needle-shaped; bodkin-shaped.

BELONITE, n. *bĕl'ō-nīt* [Gr. *belone,* needle, and *ite*]: needle-shaped, colorless, transparent microscopic crystals found in glassy, volcanic rocks.

BELOOCHEE, *bĕ-lô'chē,* or BALUCHI, *bă-lô'chē* [Pers.]: native or inhabitant of Beloochistan: language of the Baluchis, or original people of Beloochistan, as distinguished from the tribe, Brahoes, at present dominant there. The B. language belongs to the Iranic branch of the Aryan fam. of languages. It has no literature and no alphabetic characters of its own, the Arabic characters being employed whenever there is need of committing B. speech to writing. The B. people are a handsome, active race, possessing no great physical strength, but inured to changes of climate and season, and capable of enduring every species of fatigue. In their habits they are pastoral and much addicted to predatory warfare, in the course of which they do not hesitate to commit every kind of outrage and cruelty. Polygamy is universal among them. Wives are obtained by purchase, payment being made in cattle or other articles of pastoral wealth. As under the Levitical law in Israel, a man is required to marry his deceased brother's relict. In religion they are Mohammedans.

BELOOCHISTAN, or BALUCHISTAN, *bĕl-ô'chĭs-tân':* country of s. Asia; bounded on the n. by Afghanistan, on the e. by British India, on the s. by the Arabian Sea, on the w. by Persia; lat. 25°—30°n., long. 61°—70° e.; extreme length e.—w. 550 m.; breadth 450 m.; 134,000 sq. m. It includes Independent B.; Quetta and the Bolan; British B.; and certain Afghan and Baluch tribes on the Indian frontier. The greater part of B. is now ruled by a confederation of chiefs under the suzerainty of the khan of Khelat; Quetta and the Bolan are administered by Brit. officials; the Assigned Districts, formerly belonging to Afghanistan, are under Brit. rule; the dist. of Khetran came under British control 1888–9; and the country between the Zhob Valley and the Gumal Pass more recently. The principal towns are Khelat, the cap.; Quetta, now larger than

the cap.; Mastang; Kozdar; Bela; Kej; Bágh; Gandáva; Dádar; and Sonmiáni. Beloochistan was almost entirely a *terra incognita* to Europeans till 1810. Most of the country is still unknown, but it has been crossed by several travellers; and the laying of the Indo-Afghan railway (completed to Quetta 1887, Mar.) through the 90 m. of desert in the n.e., as well as the surveys of the Indo-European Telegraph Company in the s., have established its general features. It is now practically a British protectorate, whose native chiefs receive small pensions from the Indian govt. The surface is generally mountainous, especially towards the n., the peak of Takkatu being said to be 11,000 ft. high. Even the bottoms of some of the valleys have an elevation of 5,700 ft.; and the cap., Khelat, situated on the side of one of them, is 6,000 ft. above the sea. The rivers are inconsiderable, unless after heavy rains: even the largest of them, the Dusti, after a course of about 1,000 m. has been found only 20 inches deep, and 20 yards wide at its mouth. The pastures are exceedingly rich, the country forming an immense camel-grazing region, and supporting large numbers of cattle, sheep, and goats. The n. w. part is noted for its horses, and steps have been taken recently to improve the native breed by the importation of thoroughbreds, Norfolk trotters, and Arabian stallions. The scanty, and uncertain rainfall limits the agricultural produce; but most of the crops found in India do well here. The chief minerals are coal, copper, lead, antimony, iron, sulphur, alum, and sal-ammoniac. Manufactures are unimportant. Chief exports are wood, hides, madder, dried fruit, tobacco, and dates. The religion is Mohammedan and trade is almost exclusively in the hands of Hindus. The khan keeps a personal army of 1,200 men, and can assemble about 10,000 tribal irregulars. There are numerous native fortifications of no strength, and several modern ones erected by the British. In 1839 the royal city of B. was taken by storm by the British because of the treachery of the khan; 1841 it was again taken and held temporarily; 1857 Mir Khudadad came to the throne; 1877 the British by treaty permanently occupied Quetta, and established a polit. agent at Khelat; and 1893, Apr., the khan caused a number of his wives to be cruelly put to death and was charged with having murdered and tortured many high officials, for which he was compelled by the Brit. Indian govt. to release his surviving prisoners, explain his action, pay a fine of 40,000 rupees, to be distributed among the families of his victims—and was deposed. Pop. (1909), British and independent, about 915,000.

BELOVED, a. *bĕ-lŭv'ĕd:* Pp. *bĕ-lŭvd'* [AS. *be*, intensive; *lufian*, to love]: much loved; greatly esteemed; dear to the heart.

BELOW, prep. *bĕ-lō'* [*be* and *low*]: under; unworthy of: Ad. in a lower place.

BELPAS'SO: town of Sicily, on the lower part of the

s. slope of Mount Etna, in the province and 8 m. n.w. from the town of Catania. Below the town is an expanse of brown lava, but the surrounding country is generally rich and fruitful. A town called Mel Passo, from the abundance of honey in its neighborhood, stood not far from the site of the present town, but was destroyed by an eruption in 1669; when the inhabitants removed a few miles off, in the plain, and built a town of which the desolate remains bear the name of *Belpasso Vecchio;* malaria compelled them to leave it, and to return to the mountain-slope, notwithstanding its occasional dangers. Pop, abt. 7,500.

BELPER, *bĕl'pĕr:* market town of Derbyshire, Eng., on the Derwent; a station on the North Midland railway, 7 m. n. from Derby. One of the most conspicuous public buildings is a church, of recent erection, on an eminence above the town; the union workhouse is also worthy of notice, being a splendid building in the Elizabethan style of architecture. B. is, to a considerable extent, a town of recent growth, and owes its prosperity to the establishment of cotton-works here by Messrs. Strutt, one of whom was elevated to the peerage as Lord Belper. In these works a very great number of operatives are employed. The manufacture of silk and cotton hosiery is also largely carried on in B. Nail-making and the manufacture of brown earthenware employ many of the inhabitants. The surrounding country is rich in coal, iron, lead, and limestone. Pop. 10,920.

BELSHAM, *bel'sham*, THOMAS: 1750–1829; b. Bedford: English Unitarian theologian. He was educated a Calvinist, and became pastor of a congregation and head of the theological acad. at Daventry. These offices he resigned 1789, embracing Unitarian views, and shortly after received the charge of a new theological acad. at Hackney, which in a few years was given up for want of funds. He succeeded Dr. Priestley in his pastoral charge, and in 1805 became the successor of Dr. Disney, in London, where he continued till his death. Most of his works are controversial: his doctrine regarding the person of Christ represents the purely 'humanitarian' view, as distinguished from the more nearly Arian sentiments of Channing. He published also a work on mental and moral philosophy, following Hartley, and a memoir of his predecessor, Theophilus Lindsey.

BELSHAZZAR, *bĕl-shăz'zar*, or BELSA'ZAR, or BEL-SHAR-EZAR: last king of the Chaldæan dynasty in Babylon. The name occurs only in the Old Test.; and the account there given, formerly supposed irreconcilable with that by Herodotus and Berosus, has, by recent discoveries been shown to be confirmed by those writers. It appears that Bel-sar-uzar was the eldest son of King Nabonidus, and shared the government with him—Bel-sar-uzar holding Babylon and perishing in its capture by the Medes and Persians; 'while Nabonidus, leading a force to the relief of Babylon, was defeated, and was compelled to capitulate at Borsippa' (*Sir Henry Rawlinson*).

BELT, n. *bĕlt* [Icel. *belti;* L. *baltĕŭs,* a girdle or belt: Gael. *balt,* a border, belt]: a flexible band for the waist; a strap and buckle or the like serving as a girdle; a continuous band, especially a stout band, as of leather, connected so as to be endless, used for transmitting power between two pulley-wheels, and thus driving machinery; any broad encircling band or zone, as a cloud-belt, or a course of bricks extending around a building. V. to supply with a belt; to engirdle; to fasten a belt to (something); to drive, as machinery with a belt or system of belts.

The endless B. for driving machinery was introduced many centuries ago. It is employed not only because it is convenient and cheap, but because it will slip when subjected to undue strain, and this slippage prevents breakage of the machinery. B. transmission of power to machines has been most highly developed in the United States, English mechanics often preferring to use hemp ropes called rope-drives. Leather B. are commonly made of the stoutest parts of ox-hides, though woven fabrics of cotton, etc., often surfaced or filled with rubber or composition, are sometimes used. Leather B. are of all sizes, from the round B. one-eighth of an inch in diameter, for connecting very light moving parts, to heavy engine belts, 8 or 9 feet wide, capable of delivering several hundred horse-bower, before they will slip on the large pulleys on which they run. The pieces composing a large belt are shaved so as to lap over each other, the joining surfaces being cemented, and sometimes also secured by rivets so as to form practically one long stout piece of solid leather of uniform thickness and strength. The opposite ends of a B., which are joined to make it continuous or endless, are either punched with holes, and laced together (see BELT-LACE), or else some form of metal clasp or clamp is used to make the connection. In hanging and adjusting driving B. for use, the stronger and rougher side of the leather is placed inside so as to increase the friction or tendency of the B. not to slip on the pulley; rubbing the pulley surface with resin also promotes the same end. If a B. is set too tightly around the pulleys, it tends to bend the shafts on which the pulleys are mounted, and subjects the shaft-bearings to undue friction; if set too loosely, the belt slips. A new B. has to be set somewhat tight, as it stretches, and after a time usually requires to be tightened by shortening. The simplest arrangement of machinery B. turns the driven pulley in the same direction as the driver (as the pulley is termed that is on the shaft receiving power from the engine, motor, etc.). Twisting the B. reverses the direction of turning of the driven pulley. To drive a shaft at right angles to the driving shaft, a quarter twist is given to the B. The flexibility of the B. permits very many variations in direction and speed. If the driver be twice the diameter of the driven pulley the latter will rotate at double speed, but if the driver be smaller than the driven pulley the latter will rotate as much slower as

the difference in diameter. ABDOMINAL BELT, one for supporting the abdomen, as of a stout person. CONVEYOR BELT, a broad flat endless belt, as of leather, that travels slowly over pulleys, having its edges curved slightly upwards, so that it serves to convey any loose substance dropped on its surface, which may be scraped off or dropped at another point in its travel. ELECTRIC or MAGNETIC BELT, one for wearing on the body, and made of alternate plates of different metals, as zinc and copper, which are assumed to set up a faint electric current, as the result of the heat or moisture of the body. Compare thermopile. HYDRAULIC BELT, an endless belt supplied with buckets for carrying water. BELTED, pp. having, wearing, carried or driven by a belt. BELTING, imp. n., belts collectively, especially driving belts for machinery, or material for such. BELT-CLASP, n. a buckle for a waist-belt; a metal contrivance for coupling machinery belts, in the latter sense also called belt-coupling. BELT-CUTTER, n. a tool for squaring the ends of machinery belts, and punching holes for lacing; a device for cutting strips from hides for machinery belts. BELT-DRIVE, n. a belt or system of belts for driving machinery. BELT-GEARING, n. any arrangement of belts for driving machinery, including the entire mechanism of pulleys, shafting, hangers and couplings. BELT-LACE, n. a narrow strip of leather for lacing together the ends of machinery belts. BELT-LACING, n. a belt-lace, or belt-laces collectively. BELT-PULLEY, n. See PULLEY. BELT-SAW, n. a band-saw. BELT-SHIFTER, n. a device for throwing the driving-belt of a machine into or out of operation, by shifting it from a loose or idle pulley to a live or driving-pulley, or *vice versa*. Also called belt-shipper. BELT SPEEDER, n. a mechanism, as of cone pulleys or stepped pulleys, for varying the speed of driven belts.

BELT (signifying Girdle): name given to two straits, the GREAT and the LITTLE B., which with the Sound connect the Baltic with the Cattegat. The GREAT B., about 40 m. in length, and varying in breadth from 10 to more than 20 m., divides the Danish islands, Seeland and Laaland, from Funen and Langeland. The LITTLE B. divides the island of Funen from Jutland. It is equal in length to the Great B., but much narrower. Its greatest breadth is about 10 m., but it gradually narrows towards the n., until at the fort of Frederica it is less than a mile wide.

BELUGA, n. *bē-lô'gă* [*Delphinapterus*]: genus of *Cetacea* (q.v.), of the family of *Delphinidæ* or Dolphins (q.v.), differing from the rest of that family in the blunt and broad head, which has no produced snout; the smaller number of teeth, the greater part of which often fall out before the animal is far advanced in age; and the want of a dorsal fin. The only species found in the n. parts of the world is *D. catodon* (for which name there are unhappily many synonyms, as *B. leucas*, etc.), the White Whale and White Fish of whalers, often called by English writers the B., and the

Round-headed Cachalot. The B. attains a length of more than 13 ft. The female brings forth two young ones at a birth, and shows great solicitude for them. The food of the B. consists of fish, in pursuit of which it often ascends rivers to some distance. It is gregarious, and may be seen in herds of forty or fifty; it abounds in most parts of the arctic seas, and sometimes, but not very frequently, visits the British shores.—Another species of B. is found in the southern hemisphere, called *B. Kingii.*

BELUS, the Roman name of the Assyrian and Babylonian divinity called Bel in Isaiah xlvi. 1.

BELUS, a Phœnician river at the base of Mount Carmel. Its fine sand, according to tradition, first led the Phœnicians to the invention of glass.

BELUS, Temple of, an enormous temple in ancient Babylon, rebuilt by Nebuchadnezzar about 604 B.C. Its site is thought by some authorities to be the modern Bers-Nimrud, and by others, Babil, both situated near Hillah.

BELVEDERE, n. *bĕl′vĕ dēr′* [It. *belvedere*—from L. *bellus*, fine, neat; *vidērĕ*, to see]: originally an erection on the top of a house, or an open gallery or corridor, for the purpose of looking out on the surrounding country and, enjoying the air, in which sense it is still understood in Italy. A part of the Vatican (q.v.) in Rome is known as the B., and gives name to the famous statue of Apollo. In some other countries, the word has come to signify any kind of summer-house or place of refreshment.

BELVEDERE′ (*Kochia scoparia, Chenopodium scoparium*, or *Salsola scoparia*): annual plant of the nat. ord. *Chenopodiaceæ* (q.v.); native of the middle and s. of Europe, and of great part of Asia; ornamental not by its flowers, which have no beauty, but by its close, pyramidal, rigid form, and numerous narrow leaves, which make it appear like a miniature cypress-tree. It is sometimes called Summer Cypress.

BELVISIA, *bĕl-vĭz′ĭa* (also called Napoleo′na): genus of oxogenous plants, type of the nat. ord. *Belvisiaceæ*, of which order only a very few species have been discovered, natives of the tropical parts of Africa. They are large shrubs, with smooth, simple, leathery leaves. The flowers grow in threes, sessile in the axils of the leaves, and are beautiful and extremely curious. The calyx is a thick, leathery cup, divided into five ovate segments. The corolla consists of three distinct rings; the outer one 5-lobed, and furnished with ribs, by means of which it is strongly plaited, turning back over and hiding the calyx when full blown; the second, a narrow membrane, divided into numerous regular segments like a fringe; the third, an erect cup-shaped membrane. The stamens are erect like another cup; the ovary 5-celled, with two ovules in each cell; the style short, thick, and 5-angled, with a broad, flat, 5-angled stigma. The fruit is a soft berry, crowned with the calyx,

with large kidney-shaped seeds. The wood is soft, and contains numerous dotted vessels.—The pulp of the fruit of the best-known species is mucilaginous and eatable, the rind very full of tannin; the fruit is as large as a pomegranate, and the seeds 1¼ inches long.—The position of this remarkable order in the botanical system is not yet well determined. Lindley regards it as most nearly allied to *Rhizophoraceæ* (Mangroves, q.v.). It is supposed by some that the two inner rings of the corolla should be regarded as sterile stamens, and the place of the order is thus fixed near *Barringtoniaceæ* (q.v.).

BELZONI, *bel-zō'nē*, Giovanni Battista: 1778–1823, Dec. 3.; b. Padua; son of a poor barber. He was educated at Rome, for the priesthood, but turned to mechanical science, especially hydraulics. About 1800, he visited Holland, and in 1803 England For a time he gained a living by exhibiting feats of strength in the theatres. At Astley's, he played the part of Hercules; but he continued his mechanical studies, and gave numerous hydraulic representations in the most populous towns of the kingdom. After nine years in England, he went to Spain and Portugal, in his capacity of theatrical athlete. From the peninsula, he passed to Malta, and thence to Egypt, 1815, on the invitation of Mehemet Ali, who wished him to construct a hydraulic machine. After succeeding in this undertaking, he was induced, by the travellers Burckhardt and Salt, to direct his attention to the exploration of Egyptian antiquities. He threw himself with ardor into his new vocation. He removed the colossal bust of the so-called 'Young Memnon' from the neighborhood of Thebes to Alexandria, and was the first who opened the temple of Abu-Simbel. In the valley of 'the royal graves'—Biban-el Moluk—near Thebes, he discovered several important catacombs containing mummies, and among others opened, 1817, the celebrated tomb of Psammetichus, from which he removed the splendid sarcophagus, now, with the 'Young Memnon,' and other results of B.'s labors, in the British Museum. But B.'s greatest undertaking was his opening of the pyramid of Cephren. An attempt made on his life caused his departure from Egypt, but previously he made a journey along the coast of the Red Sea, and another to the Oasis of Siwah, hoping there to find ruins of the temple of Jupiter-Ammon. In the course of his explorations, he discovered the emerald mines of Zubara and the ruins of Berenice, the ancient commercial entrepôt between Europe and India. In 1819, Sep., he returned to Europe, visited his native town, Padua, and enriched it with two Egyptian statues of granite. He published in London his *Narrative of the Operations and Recent Discoveries within the Pyramids, Temples, Tombs, and Excavations in Egypt and Nubia; and of a Journey to the Coast of the Red Sea in search of the ancient Berenice, and another to the Oasis of Jupiter-Ammon* (1821, with an atlas of 44 colored engravings). In 1821, he opened in London an exhibition of his Egyptian antiquities, but soon afterwards undertook a journey to Timbuktu, central Africa.

At Berlin, he was attacked by dysentery, and returned to Gato, where he died. His original drawings of the royal tombs that he had opened in Egypt were published by his widow (London, 1829).

BEM, *bĕm*, JOSEPH: 1795–1850, Dec. 10; b. Tarnov, Galicia: commander of the army in Transylvania during the Hungarian revolution, 1848–9. After a course of military adventure in Poland, he went to France, where he earned a livelihood by teaching mechanics and mnemonics. In 1848, after failing in an attempt to organize an insurrection in Vienna, he joined the Hungarians, and was intrusted with the command of the army of Transylvania, 8,000–10,000 men. After some checks from the Austrian army, he defeated them at Hermannstadt and the bridge of Piski; and succeeded in driving both them and their allies, the Russians, back into Wallachia, 1849, March. Having thus made himself master of Transylvania, he proposed, by amnesties and general mild rule, to gain the adherence of the German and Slavonian population, especially in Wallachia; but his propositions were not entertained by Kossuth and the Hungarian commissariat. After expelling the troops under Puchner from the Banat, B. returned into Transylvania, where the Russians had defeated the Hungarians. Here he reorganized his forces, and did all that was possible in his circumstances to prevent the union of the Russians with the Austrians, but his efforts were unsuccessful. After failing in an attempt to excite an insurrection in Moldavia, he was defeated in a battle near Schäszburg, where he was opposed to three times the number of his own troops. At Kossuth's request, he now hastened into Hungary, where he took part in the unfortunate battle near Temesvar. Retreating into Transylvania, he defended himself for some days against a vastly superior force, and then made his escape into Turkey, where he embraced, from political motives, the profession of Islam, was raised to the dignity of a pasha, and obtained a command in the Turkish army. In 1850, Feb., he was sent to Aleppo, where, after suppressing the sanguinary insurrection of the Arabs against the Christian population, he died of fever. In private life B. was benevolent, and, as a military leader, was distinguished by courage, presence of mind in extreme danger, and remarkable rapidity of movement.

BEMA, n. *bē'mă* [Gr. a tribunal]: a raised structure for an elevated seat; a bishop's throne. In *anc. Greece*, the B. was the platform from which a public speaker addressed an assembly: in the *Gr. Church*, the sanctuary or chancel, the inclosed place at whose centre stands the altar, with the bp.'s throne at its rear; it is somewhat raised above the level of the main church.

BEMBATOKA, *bĕm-bâ'tōkâ* BAY OF: safe and commodious bay on the n.w. coast of Madagascar; lat. 16° s., long. 46° e. The Betsiboka river, with the Ikiopa, drains into the bay; the former, which is about 300 m. long is navigable for small steamers for about 90 m. Mojanga,

on the n. side of the bay of B., is a town of about 14,000 inhabitants.

BEMBECIDÆ, *bĕm-bĕs'ĭ-dē:* family of hymenopterous insects of the division in which the females are furnished with stings. With *Sphegidæ* (q.v.), and other nearly allied families, they receive the popular name of Sand-wasps. They very much resemble bees or wasps in general appearance. They are natives of the warmer parts of the world. Some of them are remarkable for the odor of roses which they emit. The females make burrows in sandy banks, in each of which they deposit an egg, and along with it the bodies of a few flies as food for the larva. The B. fly very rapidly, and with a loud buzzing noise. *Bembex rostrata* is common in the s. of Europe.

BEMBO, *bĕm'bō*, PIETRO: 1470, May 20—1547, Jan. 18; b. Venice: celebrated Italian scholar of the 16th c. He studied at Padua and Ferrara. He edited the Italian poems of Petrarch, printed by Aldus, 1501, and the *Terzerime* of Dante, 1502. In 1506, he proceeded to the court of Urbino, whence, 1512, he went to Rome, and was made sec. to Pope Leo X. On the death of Leo, B. returned to Padua, where he became a liberal patron of literature and the arts, as well as a fertile writer. In 1529, he was made historiographer to the republic of Venice, and keeper of St. Mark's Library. In 1539, B., who had taken only the minor ecclesiastical orders, was unexpectedly presented with a cardinal's hat by Pope Paul III., who afterwards appointed him to the dioceses of Gubbio and Bergamo. B. united in his character all that is amiable. He was the restorer of good style in both Latin and Italian literature, having had a taste so fastidious that he is said to have subjected each of his own writings to forty revisions previous to publication. Some of his writings are marred by the licentiousness of the time. Among his works may be mentioned the *Rerum Veneticarum Libri XII.* (Venice, 1551), of which he published an Italian edition (Venice, 1552); his *Prose*, dialogues in which are given the rules of the Tuscan dialect; *Gli Asolani*, a series of disputations on love, etc; *Rime*, a collection of sonnets and canzonets; his Letters, Italian and Latin; and the work, *De Virgilii Culice et Terentii Fabulis.* His collected works were published at Venice, 4 vols., 1729.

BEM'BRIDGE BEDS: a division of the Upper Eocene stratum, resting on the St. Helen's, and capped by the Hempstead series; developed principally in the Isle of Wight. They may be divided into four subdivisions: 1. The upper. 2. Unfossiliferous mottled clays, alternating with fossiliferous marls and clays whose characteristic organisms are *Cerithium mutabile* and *Cyrena pulchra.* 3. The oyster-bed, of greenish marl, containing immense quantities of a species of oyster (*Ostrea Vectensis*) with *Cerithia, Mytili,* and other marine mollusca. 4. The Bembridge limestone, generally a compact, pale-yellow, or cream-colored limestone, but sometimes vesicular and con-

cretionary, and containing occasionally siliceous or cherty bands. This is interstratified with shales and friable marls. All the beds are fossiliferous, containing numerous land and fresh-water shells. One bed is composed almost entirely of the remains of a little globular *Paludina*. Shells of *Lymnea* and *Planorbis* are abundant, and are accompanied with the spirally striated nucules of two species of *Chara*, water-plants which have been well preserved because of the large quantity of lime which enters into their composition. In this division have been found the mammalian remains of the species of *Palæotherium* (q.v.) and *Anoplotherium* (q.v.) which characterize the gypseous deposits of Montmartre; it is consequently considered the British equivalent of these Parisian beds. the Anita group of Colorado is also similar.

BEMIRE, v. *bĕ-mīr′* [AS. *be;* Icel. *myri*, a swamp.]: to soil, as with mud, in passing through dirty places. BEMI′RING, imp. BEMIRED, pp. *bĕ-mīrd′*.

BEMOAN, v. *bĕ-mōn′* [AS. *bi, moenan*, to moan]: to lament; to express sorrow for; to bewail. BEMOAN′ING, imp. BEMOANED, pp. *bĕ-mōnd′*. BEMOAN′ER, one who bemoans.—SYN. of 'bemoan': to bewail; lament; deplore.

BEMOCK, v. *bĕ-mŏk′* [*be*, to make; and *mock*]: in *OE.*, to treat with mockery.

BEN, n. *bĕn* [Scot.]: in *Scot.*, an inner apartment. See BUT.

BEN, or ABEN, or AVEN, or EBN, or IBN: forms, in the different Semitic languages, of the same word, which means 'son,' and is used as a prefix to names. *Ben*, a Hebrew form, is familiar to us from its use in Bible names—e.g., Benhadad, son or worshipper of Hadad, or Adod, chief idol of the Syrians; Benoni, son of my pain; Benjamin, son of the right hand, etc. These examples show that not only literal but metaphorical sonship is expressed by this prefix. This form of constructing a name by composition was common in the Simitic languages, on account of their lack of patronymics. The plural, *Beni*, is found in the names of many Arab tribes—as Beni Omayyah, sons of Omayyah, the family known in history as the Ommiades; and sometimes in the names of places—as Beni-Hassan.

BEN, or BEIN, or BHEIN: Gaelic word signifying 'mountain' or 'mountain head.' It is prefixed to the name of many mountains in Scotland—as Ben Nevis, Ben Macdhui, Ben Cruachan, etc. The corresponding term in various parts of Europe is *Pen*, found in many of the names in Cornwall and Wales, in the Pennine Alps, and probably also in the word Appennines and the Cevennes of France.

BEN, OIL OF: fluid fixed oil, obtained from the seeds of a tree found in India and Arabia, and known as the HORSERADISH TREE (*Moringa pterygosperma*). The seeds are called BEN NUTS, and are roundish, with three membranous wings. The oil is used by watchmakers, because

it does not readily freeze; also by perfumers, as the basis of various scents; and other oils are often adulterated with it.

BENARES, *bĕn-ā′rĕz* (better spelled *Banáras* or *Váránasi*): city on the left side of the Ganges, which here varies, according to the season, between 50 and 92 ft. in depth, and in width between 600 yards and a little more than half a mile; in lat. 25° 17′ n., long. 83° 4′ e.; 421 m. to the n.w. of Calcutta, and 466 and 74 respectively to the s.e. of Delhi and Allahabad. Without reckoning Secrole, which, at the distance of 2 or 3 m. westward, contains the official establishments, B. covers a kind of amphitheatre of 3 m. in front, and 1 m. in depth, the immediate margin of the river, which is comparatively steep, being occupied chiefly by flights of steps, or ghats, as they are called, where crowds of all classes spend the day in business, amusement, or devotion. This lively scene, backed by the minarets of about 270 mosques, and the pinnacles of over 1,400 pagodas, presents a highly picturesque appearance from the opposite shore of the Ganges. On closer inspection, the city, as a whole, disappoints a visitor. The streets, or rather alleys, altogether impracticable for wheeled-carriages, barely afford a passage to individual horsemen or single beasts of burden; and these thoroughfares are shut out from the sun and air by buildings of several stories. Yet many of the houses are very handsome and elaborately ornamented.

In the traditions of the country, B. is believed to have been coeval with creation; and not entirely unauthentic history does assign to it a really high antiquity. In its actual condition, however, B. is modern. Both in extent and in embellishment, it owes much to the influence of Mahratta ascendency, which dates from the close of the 17th c.; and it has perhaps, not a single structure that reaches back to the close of the 16th. As the central seat of Hinduism, B., on high occasions, attracts immense crowds of pilgrims—sometimes as many as 100,000; and some years ago, during an eclipse of the moon, forty persons were trampled to death in the streets. Naturally enough, the Brahmins of B. have always been remarkable for bigotry. Now, however, Brahminism appears on the decline; and a result, which Mohammedan persecution vainly tried to produce, seems to be gradually achieved, chiefly through the introduction of European literature and science. On the Sanskrit College instituted 1792, there was at a later date ingrafted an English department, comprising poetry, history, mathematics, and political economy. It is attended by numerous Hindus, and a few Mussulmans and native Christians. Besides extensive manufactures in cotton, wool, and silk, its commanding position on the grand line of communication—road, river, and rail alike—renders it the principal emporium of the neighboring regions. It is the great mart for the shawls of the n., the diamonds of the s., and the muslins of the e.; while it circulates the varied productions of Europe and

America over Bundelcund, Goruckpore, Nepal, etc. For the general history of the city, see BENARES (District.) For details of the mutiny of 1857, see SECROLE. See Sherring's *Sarced City of the Hindus* (1868). Pop. of B. (1891) 219,-467; (1901) 203,100.

BENA'RES, or BANA'RAS: district in India under the lieut. governorship of the United Provinces; bounded w. and n. by Jounpur; e. by Ghazeepore and Shahabad; s. and w. by Mirzapore. It extends in n. lat. between 25° 7′ and 25° 32′, and in e. long. between 82° 45′ and 83° 38′; about 30 m. by about 55; 998 sq. m. The district is traversed by the Ganges in a n.e. direction for about 45 m. Besides other rivers, such as the Karamnasa, the Goomtee, and the Burna, and several inferior streams, lakes and tanks are numerous but small, the largest not exceeding a mile in circuit. The annual rainfall, though averaging less than in the lower parts of the Ganges, is considerable, always exceeding 30 inches, and amounting in 1823 to 89 inches. Considering that the tract is barely within the tropics, and but little elevated above the sea, the range of the thermometer is unusually great, being between 45° in January, and 111° in May. The mean temperature is stated at 77°, nearly the middle point between the two extremes. The soil, though here and there sterile, is in general characterized by great fertility, more particularly to the left of the Ganges. In the growth of opium, indigo, and sugar—more especially of the last—the district surpasses nearly every other portion of British India. In fact, the state of agriculture is such as may be expected from the density of the population. The rich fields, the thriving villages, and the luxuriant groves render the aspect of the country delightful; and perhaps the best proof of the presence of industry and civilization is the fact that elephants, rhinoceroses, buffaloes, lions, and tigers have entirely disappeared. After a Hindu domination, according to popular faith, of 2,400 years, the district sank under the Mussulman yoke, 1193; and in the first half of the 16th c., it was annexed by Baber to the Mogul empire. On the dismemberment of that dominion, it fell to the share of the Nawab of Oude, whose grandson, 1775, ceded it to the East India Company, about ten years after that body had acquired the sovereignty of Bengal. Pop. (1881) 892,684; (1901) 5,368,600.

BENATEK, *bā-nă'tĕk:* small town of Bohemia, on the right bank of the Iser, a few miles distant from Prague; for a long time the residence of the celebrated astronomer Tycho Brahé.

BENAVENTE, *bā-nă-vĕn'tā:* town of Spain, province of Zamora; on the w. or right bank of the Esla, opposite the mouth of the Cea, 34 m. n. from Zamora. It is overlooked by a huge half-ruined castle, and surrounded by a decayed mud-wall, in which are six gates. It has spacious streets and squares, six churches, a number of schools, three hospitals, a bishop's palace, etc. The castle was formerly the seat of the family of Pimentel, Counts of

Benavente, to whose progenitor it was granted 1394. The interior of the castle was desolated by Soult, on his retreat from Oporto, and fragments of sculpture still lie scattered about. At B. Moore's retreat commenced, 1809, Dec. 28. B. is now a dull and poverty-stricken place, chiefly of mud cottages. There is no bridge; the Esla is crossed by a ferry-boat. Pop. 4,500.

BENBECULA, *bĕn-bĕk-ō'lâ:* one of the Hebrides, or Western Isles of Scotland, between North and South Uist, 20 m. w. of Skye; belonging to Inverness-shire. It is 8 m. long and 8 broad, low and flat, and consists chiefly of bog, sand, and lake, resting on a substratum of gneiss rock, with a very broken coast-line. The people are fishermen and small farmers, who fertilize the soil with the seaweed cast ashore on the island. Pop. abt. 2,000.

BENBOW, *bĕn'bō*, JOHN: English admiral, 1653-1702, Nov. 4; b. in Shropshire. He distinguished himself first as captain of a merchantman, in a bloody action with Sallee pirates. James II. gave him a commission in the navy. After the Revolution, he obtained the command of a large ship, and was made rear-admiral. Off St. Martin, in the West Indies, 1702, Aug. 19, he came up with a superior French force under Admiral Du Casse. For four days he kept up a running-fight, almost deserted by the rest of his squadron. On the morning of the 24th, his right leg was smashed by a chain-shot. As soon as his wound was dressed, he was carried to the quarter-deck. The enemy sustained severe loss; but the infamous cowardice of the other captains made the contest hopeless, and B. sailed away to Jamaica. He died of his wound. The recusant officers were tried by court martial, and two were shot.

BENCH, n. *bĕnsh* [AS. *benc:* Dan. *bänk:* Icel. *bekkr* (see BANK)]: a long seat of wood or stone; a strong table used by crafts; the seat of the judges; the judges or magistrates on it: V. to furnish with benches. BENCHER, n. *bĕnsh'ėr*, one of the senior members of an Inn of Court, the body charged with the management of its affairs. BENCH'ERSHIP, n. the condition or dignity of a bencher. BENCH-DOGS, n. pl. a pair of clamps for use on a carpenter's bench. BENCH-HOOK, n. a clamp shaped like a hook for holding work in the edge of a carpenter's bench; also a hook for use as a bench-stop. BENCH-MARK, n. in *surveying*, a mark showing the starting-point in levelling along a line; also any one of a series of similar marks which show where the levelling-staffs were placed when the various levels were read. BENCH SHOW, a public show of dogs, usually placed on long platforms or benches. BENCH-STOP, n. a device for holding work on a carpenter's bench againt end-slippage.

BENCH: the dais or elevated part of a court-room or chamber where the judges sit to administer the laws. In English courts of justice, this seat is in form literally a bench or couch along one end of the court-room, the num-

ber of judges and their places on this bench being marked by separate desks, one for each judge; but in the United States, chairs, set in a row on a platform, take the place of the bench. The term B. is applied also to the judges as a class; thus we speak of the *B. and bar.* It has likewise, popularly and conventionally, in England, an ecclesiastical application, the bishops of the Church of England being, as a body, sometimes designated by it; hence the expression, 'B. of Bishops.' See BANC.

BENCH, COMMON, COURT OF: in England, a technical name sometimes given to the Court of Common Pleas: see COURTS OF COMMON LAW.

BENCH, KING'S or QUEEN'S: in England, the supreme court of common law in the kingdom: see COURTS OF COMMON LAW.

BENCH, UPPER: name given to the Court of King's Bench in the time of Cromwell: see COURTS OF COMMON LAW.

BENCHERS, *bĕnch'ĕrz.* members of the governing bodies of the four great Law Societies in England, or Inns of Court—Lincoln's Inn, Inner Temple, Middle Temple, and Gray's Inn—are so called. They are generally queen's counsel or barristers of distinction; and they annually elect a president or *treasurer,* as he is called, who takes the chair at their corporate meetings, and speaks and acts in their name: see INNS OF COURT.

BENCH-WARRANT: order of a judge or court of the attachment or arrest of an offender. It issues in cases of indictment and of contempt of court. It is often used to bring into court delinquent jurymen. See WARRANT.

BENCOOLEN, *bĕn-kô'len:* cap. of a Dutch residency on the w. coast of Sumatra; in 102° 20′ e. long., and 3° 48′ s. lat. Pop. 7,000.

The residency B. has an area of 9,567 sq. m. Rice, coffee, pepper, maize, sugar-cane, the cocoa-nut, and other fruits are grown. B. was founded by the English (1686), but was given to the Dutch by the London Treaty, 1824, Mar. 11. Pop. of dist. (1881) 143,248.

BEND, v. *bĕnd* [AS. *bendan;* Icel. *benda,* to stretch]: to stretch as a bow; to crook; to incline; to turn over or round; in *naut.,* to tie or make fast; thus, to 'bend the cable' is to tie or make it fast: N. a turn; a curve. BEND'ING, imp. BEND'ED, or BENT, pp.: ADJ. in a crooked position, as the leg at the knee. BEN'DER, n. one who or that which. BENDABLE, a. *bĕnd'ă-bl,* that may be bent. BEND, n. in *her.,* a band passing diagonally across a shield from one corner to another—see note under ESCUAGE. BEND'LET, n. a narrow bend. BEND SINISTER [L. *sinister,* on the left]: a band on a shield running from the upper right-hand corner to the lower left-hand corner, as it appears to the eye and denoting bastardy. BEND'Y, a. having bends which divide it diagonally into four, six, or more parts.—SYN. of 'bend, v.': to crook; curve; direct; incline; exert; apply; subdue; bow; purpose.

BENDIGO, *bĕn'dĭ-gō;* county of the Loddon dist. in the colony of Victoria, Australia; it has the Loddon river on its w. boundary and the Carupaspe on the e.; 1,949 sq. m. The chief town, Sandhurst, formerly Bendigo, and still familiarly so known, is in the midst of rich alluvial deposits of gold. The quartz mining operations of the dist. employ about 6,000 persons. The county is traversed by the main line of railway between Melbourne and Echuca. Pop. (1881) 56,653; (1901) 43,112.

BENDLEATHER, n.: a superior quality of shoe-leather.

BENE, n. *bĕn'e* [etym. doubtful]: the American name of the *Sesamum orientale,* or Oil-plant, called *Vangloe* in the West Indies.

BENÉ, *bā'nā:* town in the province of Mondovi, Piedmont, 18 miles n.e. of Coni. There are many ruins of an ancient Roman town here. Pop. 6,000.

BENEATH, prep. *bĕ-nēth'* [AS. *be,* by; *neothan,* beneath, below]: under; lower in position or rank: AD. in a lower place; below.

BENEDEK, *bā'nė-dĕk,* LUDWIG VON: 1804–81, Apr. 27; b. Oedenburg, Hungary: Austrian general. He entered the army, 1822, and on the occasion of the insurrection in Galicia, 1846, he distinguished himself. In 1847, he commanded a regiment in Italy. On the occasion of the retreat from Milan, his name was mentioned in the army reports by Marshal Radetsky in the highest terms He afterwards won renown at the taking of Mortara, and in the battle of Novara. In 1849, he commanded in Hungary, and was in several battles, being twice wounded. At the close of the Hungarian campaign, he was ordered again, high in command, to Italy. In the Italian campaign of 1859, B. commanded the eighth corps of the Austrians. At Solferino, B. drove back the Piedmontese with great slaughter, and was the last to leave the field. He was gov. of Hungary in 1860, and soon afterwards got the command of the Austrian army in that country. He commanded the Austrians in the war with Prussia, 1866, but shortly after the defeat of Sadowa he was superseded.

BENEDETTI, *bā-nā-dāt'ĭ,* VINCENT, Count: diplomatist: 1817–1900, Mar. 28; b. Bastia, Corsica. He was appointed 1855 director of political affairs to the French foreign minister, and in that capacity edited the protocols of the Treaty of Paris 1856. He was appointed ambassador at Turin 1861, and at Berlin 1864. B. will be remembered chiefly as the writer of the remarkable draft of a secret treaty between France and Prussia, pub. 1870, at the outbreak of the Franco-German war. In a pamphlet issued at Paris 1871, *Ma Mission en Prusse,* he throws its whole responsibility on Bismarck. He also wrote *Studies in Diplomacy.* See FRANCO-GERMAN WAR.

BENEDICITE, *bĕn-ė-dĭs'ĭ-tė:* ancient hymn or song; a Hebrew canticle said to have been composed with reference to the three children in the fiery furnace, Dan. iii. 8–30, sung in the Christian Church as early as the time of St.

Chrysostom, and used in the Anglican Church in the morning services when the Te Deum is not sung. It is named from its first word in the Latin: in Eng. it begins 'O all ye Works of the Lord! bless ye the Lord!'

BENEDICT, n. *běn'ĕ-dĭkt*, also spelled BEN'EDICK [one of Shakespeare's characters in *Much Ado about Nothing*, who begins as a confirmed bachelar and ends by marrying Beatrice]: a late, unwilling, or unexpected convert to matrimony; sometimes applied to a bachelor.

BENEDICT: name of fourteen popes. Of these the following are historically important:

BENEDICT VI. (pope 972–974), installed under protection of Emperor Otho the Great. When the emperor died, the turbulent citizens of Rome renewed their outrages of a few years previous, and the pope was strangled 974, by order of Cresentius, son of the notorious Empress Theodora. This pope was succeeded by Benedict VII. (pope 975–983), who had a peaceful reign.

BENEDICT VIII., son of Count Gregory of Tuscoli, was elected in 1012; but was driven from Rome by the antipope Gregory. In 1014, he was restored to the papal chair by Emperor Henry II., and afterwards defeated the Saracens, and took from them, with the help of the Pisans and Genoese, the island of Sardinia, also various places in Apulia from the Greeks, by the help of Henry. He distinguished himself as a reformer of the clergy, and interdicted, at the synod of Pavia, both clerical marriage and concubinage. He died 1024.

BENEDICT IX., nephew of the preceding, was elected pope at the age of 18, in 1033; but in 1038, the Romans rose in indignation, and banished him on account of his almost unexampled licentiousness. He was reinstalled by Conrad II.; again formally deposed by the Consul Ptolemæus, who set up Sylvester III. in his place; and after three months, was once more installed as pope by means of bribery. By a new simoniacal compact, John Gratianus was declared pope under the name of Gregory VI. The emperor Henry III., to remove such gross scandals from the church, deposed all the three popes—B., Sylvester, and Gregory, and caused Suidger, Bishop of Bamberg, to be elected as Clement II.; but on his death, 1047, the deposed B. IX. again corruptly regained the papal see, and held it eight months, until 1040, when he was displaced, first by Damasus II., afterwards by Leo IX. He died in the convent of Grotta Ferrata, 1056.

BENEDICT XIII. (pope 1724–30) was a learned and well-disposed man, of simple habits and pure morals, though rather strict in his notions of the papal prerogative. He unfortunately yielded himself to the guidance of Cardinal Coscia, a greedy, unscrupulous personage, who greatly abused the confidence reposed in him. B. always showed moderation in politics, and an honorable love of peace, and was instrumental in bringing about the Seville treaty of 1729. During this pontificate, a remarkably large number of saints, chiefly from the monastic orders, were added to the calendar.

Benedict XIV. (Prospero Lambertini), most worthy to be remembered of all the pontiffs so named, was b. Bologna, 1675. Before his elevation, he had distinguished himself by extensive learning, and by ability in the several offices of *Promotor Fidei*, Bp. of Ancona (1727), cardinal (1728), and Abp. of Bologna (1732). Succeeding Clement XII., he began his pontificate, 1740, with several wise and conciliatory measures; founded chairs of physic, chemistry, and mathematics in Rome; revived the acad. of Bologna, and instituted others; dug out the obelisk in the Campus Martius; constructed fountains, rebuilt churches; caused the best English and French books to be translated into Italian; and in many other ways encouraged literature and science. His piety was sincere, enlightened, and tolerant, and his doctrines were well exemplified in his practice. He was extremely anxious that the morals of the clergy should be untainted; and, to that effect, established a board of examiners for all candidates to vacant sees. In proof of his toleration, he showed the frankest kindness to all strangers visiting his capital, whatever the nature of their religious opinions. The only accusation brought against him by his Roman subjects was, 'that he wrote and studied too much, but ruled too little,' or left affairs of business too much in the hands of the Cardinal Valentine. After a painful illness, B. XIV. died 1758, May 3.—His most important works are that *On the Diocesan Synod; On the Sacrifice of the Mass;* and *On the Beatification and Canonization of Saints*. A complete edition of his writings was published under the care of the Jesuit de Azevedo (12 vols., 1747-51), and in 16 vols. (1777).

BENEDICT, Sir Julius: 1804, Dec. 24—1885, June 5; b. Stuttgart: musician and composer, German by birth, but, after 1836, resident in England. He studied first under Hummel, at Weimar, and afterwards under Weber at Dresden. On Weber's recommendation, he was, 1824, made music director of the Kärnther Thor Theatre, Vienna; and afterwards filled the same post at Naples. While in Naples, he produced an opera buffa called *Giacinta ed Ernesto*, and an opera seria, *I Portoghesi a Goa*. In Paris, and afterwards (1835) in London, he appeared with great success as a pianist. In 1836, he took up his permanent residence in London, and was, during that year, director of the opera buffa at the Lyceum, where he produced an operetta of his own, composed in Naples, *Un Anno ed un Giorno*. Turning his attention afterwards to English opera, he composed *The Gypsy's Warning* (1838), *The Brides of Venice* (1844), and *The Crusaders* (1846), three works which, translated into German, have been well received in the composer's native country. He conducted the opera in Covent Garden Theatre, 1843-4, and the Norwich Musical Festival, 1845, and has since conducted much at concerts and great musical gatherings in London and in the provinces. In 1850, he conducted at Jenny Lind's concerts in America. In 1860, he produced a cantata, *Undine*, at the Norwich Musical Festival, which was very well received. His *Lily of Killarney*, first given, 1862, at Covent Garden, was his greatest

operatic success He produced a cantata, *Richard Cœur de Lion* (1863), an opera di camera, *The Bride of Song* (1864); and the cantatas *St. Cecilia* (1866) and *Graziella* (1882). His operas have much dramatic and melodic beauty, and in style and feeling are singularly English, to be the composition of a foreigner His oratorio, *St. Peter*, written for the Birmingham Musical Festival, 1870, had extraordinary success. His first symphony was received with great favor, 1873. In 1878 he was for the twelfth time conductor of the Norwich Festival. He was knighted, 1871.

BENEDICT, *bĕn'ē-dĭkt*, SAINT: 480-543, Mar. 21: b. Nursia, in Umbria, Italy: founder of monachism in the west. His family was rich, and at an early age B. was sent to the schools of literature and jurisprudence at Rome, but soon grew dissatisfied with the sterile instruction dispensed. The world was full of distractions, impurities, and ignorance; and it was difficult to resist by the ordinary safeguards of virtue the colossal evils by which men were environed; only, therefore, in the devotions of religion, in the holy silence of solitary meditation, did B. see a safe refuge from the sins of the time, and the possibility of realizing a spiritual strength which would enable him to stem the tide of corruption that was setting in. He resolved to leave the city, and betake himself to some deep solitude in which the murmur of the world would be inaudible, and alone in the rocky wilderness wrestle with his own nature, until he had conquered it and laid it a sacrifice on the altar of God. In pursuance of this resolution, when he had reached, according to some, the age of only 14, he departed from Rome, accompanied for the first 24 miles by the nurse whom his parents had sent with him as an attendant to the city. B. then left her, and retired to a deserted country lying on a lake, hence called *Sublacum* (now Subiaco). Here, in a cavern (which afterwards received the name of the Holy Grotto), he dwelt three years, until his fame spread over the country, and multitudes came to see him. He was now appointed abbot of a neighboring monastery; but soon left it, as the morals of the half-wild monks were not severe enough for his taste. This, however, only excited a livelier interest in his character, and as he lived in a period of rapid migration and interfusion of races and nations, he could not fail to draw crowds of wanderers about him. Wealthy Romans also placed their sons under his care, anxious that they should be trained for a spiritual life. B. was thus enabled to found twelve cloisters, over each of which he placed a superior. The savage *Goths* even were attracted to him, and employed in the useful and civilizing practice of agriculture, gardening, etc. He now sought another retreat, and, with a few followers, founded a monastery on Monte Cassino, near Naples, afterwards one of the richest and most famous in Italy. Here he extirpated the lingering relics of paganism, and had his celebrated interview with Totila, King of the Goths, to whom he spoke frankly and sharply on his errors. In 515, he is said to have composed his *Regula Monachorum*, in which he aimed, among

other things, at repressing the irregular and licentious life of the wandering monks, by introducing stricter discipline and order. It eventually became the common rule of all western monachism. The monasteries which B. founded were simply religious colleges, intended to develop a high spiritual character, which might beneficially influence the world. To the abbot was given supreme power, and he was told to acquit himself in all his relations with the wisdom of God, and of his Master. The discipline recommended by St. B. is, nevertheless, milder than that of oriental monachism with regard to food, clothing, etc.; but enjoins continual residence in the monastery, and, in addition to the usual religious exercises, directs that the monks shall employ themselves in manual labors, imparting instruction to youth, copying manuscripts for the library, etc. By this last injunction, St. B., though this was not directly intended, preserved many of the literary remains of antiquity; for the injunction, which he gave only with regard to religious books, was extended afterwards to many secular productions. It is remarkable that the founder of the most learned of all the monastic orders was himself so little of a scholar, that St. Gregory the Great described him as being '*scienter nesciens, et sapienter indoctus*'—learnedly ignorant, and wisely unlearned. See BENEDICTINES.

BENEDICT BISCOP: English ecclesiastic; abt. 629 –690, Jan. 12. He exercised an important influence on Anglo-Saxon civilization and learning. He was of a noble Northumbrian family (his patronymic, according to Eddius, being Baducing), and until about his 25th year, was a courtier of Oswin, King of Northumberland. About that time, he gave up his court-life, and accompanied Wilfred to Rome (654), where he spent about ten years in study, and from which he seems to have returned soon after the synod of Whitby, 664. In 665 he was in Rome a second time, being sent on a mission by Alchfrid, King of Northumbria. After a stay at Rome of a few months, he went to Lerins, in Provence, where he became a monk, received the tonsure, and spent about two years, thus acquiring a knowledge of monastic discipline. He returned to Rome, 668, came to England with Theodore and Adrian, and was made abbot of the monastery of St. Peter (afterwards that of St. Augustine) in Canterbury. This he resigned two years afterwards, and went to Rome for a fourth time, for the purpose of bringing home the literary treasures which he had already collected. He returned about 673, bringing with him a large collection of valuable books, and repaired to Northumbria, where King Ecgfrid gave him land near the mouth of the Wear, on which he founded the famous monastery of Wearmouth. Workmen were brought from France to build and glaze the church and monastery, this being one of the earliest instances of the use of glass for windows in England. He also introduced from Gaul and Rome (which he visited again, 678) church utensils and vestments, relics, pictures, images, and again a vast number of books. He brought with him John, archchanter of

St. Peter's, who introduced the Roman choral service. On his return from this visit to Rome, King Ecgfrid presented him with more land on the other side of the Wear, at a place called Girwi, on which he built a second monastery, dependent on Wearmouth. B. made his sixth and last journey to Rome, 685, and, as on former occasions, came home loaded with books and pictures, bringing with him also, according to Bede, two silk palls, 'of incomparable workmanship.' Shortly after his return from Rome, abt. 687, he was seized with palsy, under which after languishing three years he died. During his long illness, he often anxiously exhorted his monks to look carefully after his books, and preserve them from loss or injury.

The benefits conferred by B. on Anglo-Saxon civilization, then only in its dawn, and the impulse given by his labors to Anglo-Saxon learning, were greater than can now be estimated. It is not certain that he wrote any books, and those ascribed to him are of little value; but by his personal teaching, and especially by his founding at Wearmouth such a valuable and, for the time, extensive library, he implanted in the nation a taste for literature and learning, which soon was fruitful in results, and continued so for many centuries. Bede, who was his pupil, has written a life of B., and the numerous works of this 'venerable' author are the best proof of the extent and variety of information to which he had access in the monastery of Wearmouth.

BENEDICTINES, n. plu., *bĕn'ĕ-dĭk'tĭns:* general name of all the monks following the rule of St. Benedict of Nursia (see Benedict, St.). The first Benedictine monastery was founded at Monte Cassino, in the kingdom of Naples, about 529, by St. Benedict himself. The order increased so rapidly after the 6th c., that the B. must be regarded as the main agents in the spread of Christianity, civilization, and learning in the west. They are said at one time to have had as many as 37,000 monasteries, and counted among their branches the great order of Clugny, founded about 910; the still greater order of the Cistercians, founded in the following century; the congregations of Monte Cassino, 1408, of St. Vanne, 1600, and of St. Maur on the Loire, 1627. To this last congregation all the Benedictine houses in France were affiliated. It had afterwards its chief seat at St. Maur, near Vincennes, and more lately at St. Germain-des-Prés, near Paris. Its fine conventual buildings at St. Maur on the Loire were destroyed during the revolutionary troubles. Numbering among its monks such scholars as Mabillon, Montfaucon, Sainte-Marthe, D. Achery; Martene, Durand, Rivet, Clemencet, Carpentier, Toustain, Constant, and Tassin, it has rendered services to literature which it would be difficult to over-estimate. Besides admirable editions of many of the fathers, the world of letters owes to the B. of St. Maur the *Art de Verifier les Dates* (1783–87, 3 vols. fol.), a much enlarger edition of Ducange's *Glossarium Mediæ et Infimæ Latinitatis* (1733–36, 6 vols. fol.), with a supplement (1766, 4 vols. fol.) the *De*

Re Diplomatica (1681 and 1709, fol.); the *Nouveau Traité de Diplomatique* (1750–65, 6 vols. 4to); *L'Antiquité Expliquée* (1719–24, 15 vols. fol.); the *Monuments de la Monarchie Française* (1729–33, 5 vols. fol.); the *Acta Sanctorum S. Benedicti* (1688–1702, 9 vols. fol.); the *Annales Ordinis S. Benedicti* (1713–39, 6 vols. fol.); a new and much improved edition of the *Gallia Christiana* (1715–1856, 14 vols. fol.); the *Veterum Scriptorum Spicilegium* (1653–77, 13 vols. 4to); the *De Antiquis Monachorum Ritibus* (1690, 2 vols. 4to); the *De Antiquis Ecclesiæ Ritibus* (1700–02, 3 vols. 4to); the *Thesaurus Novus Anecdotorum* (1717, 5 vols. fol.); the *Veterum Scriptorum et Monumentorum Amplissima Collectio* (1724–33, 9 vols. fol.); the *Histoire Littéraire de la France* (1733–49, 9 vols. 4to). The B. were suppressed in France with the other monastic orders, at the Revolution in 1792; and their splendid conventual buildings at St. Maur on the Loire were destroyed. They have lately been revived; and the B. of Solesmes, established 1837, have resumed under the direction of Dom Gueranger, Dom (later Card.) Pitra, and others, some of the works which the B. of St. Maur left unfinished, and entered on literary enterprises of their own. The chief B. houses in Germany were those of Prüm, Ratisbon, Fulda, Ellwangen, and Saltzburg; in Spain, they had Valladolid, Burgos, and Montserrat; in Italy, Monte Cassino, Rome, Padua, and Capua. In England, most of the richest abbeys and all the cathedral priories (excepting Carlisle) belonged to this order. In Scotland the B. had the monasteries of Dunfermline, Coldingham, Kelso, Arbroath, Paisley, Melrose, Newbottle, Dundrennan, and others. In Germany, several Benedictine monks distinguished themselves as promoters of education in the 10th c.; while in the latter half of the 11th c., the B. Lanfranc and Anselm, archbishops of Canterbury, laid the foundation of mediæval scholasticism. In Italy, also, the B. gained distinction as literati, jurists, and physicians; but almost everywhere corruption of manners appears to have accompanied their increasing wealth, until gradually it became the practice to receive, almost exclusively, the sons of noble and wealthy persons as novices among the 'Black Monks.' Several of the popes attempted a reformation of the order, and at the general council of Constance, 1416, a plan of reform was laid down, but failed in practice. In the 15th c., the B. had 15,107 monasteries, of which only 5,000 were left after the Revolution, and now not more than about 800 can be counted. From their dress—a long black gown, with a cowl or hood of the same, and a scapulary—the B. were commonly styled 'Black Monks.' The institution of convents for nuns of this order cannot be traced back beyond the 7th century.

The rule of St. Benedict was less severe than that which the eastern ascetics followed. Besides implicit obedience to their superior, the B. were to shun laughter, to hold no private property, to live sparely, to exercise hospitality, and, above all, to be industrious. Compared with the ascetic orders, the B., both in dress and manners, may be

styled the gentlemanly order of monks; and whatever may be said of their religion, they deserve a high tribute of respect for their artistic diligence and literary undertakings. At present there are eight Benedictine abbeys in England, besides an extensive establishment at Fort Augustus in Scotland, comprising an abbey and college. In the United States there are 13 abbots, 545 priests, 133 clerics, and 345 lay brothers in the order. The Benedictines have charge of 16 colleges in the United States.

Bibliography.—Chateaubriand, *Monks of the West;* Taunton, *English Black Monks of Saint Benedict;* Digby, *Ages of Faith.*

BENEDICTION, n. *bĕn'ĕ-dĭk'shŭn* [F.*bénédiction*—from L. *benĕdictĭōnem*—from L. *bĕnĕ*, well; *dictus*, said, spoken]: a blessing pronounced; kind wishes for success. BENEDICTORY, a. *bĕn'ĕ-dĭk'tĕr-ĭ*, expressing wishes for good. BENEDIC'TIVE, containing, expressing, or imparting a blessing. BENEDIC'TUS, n. [L. blessed]: the name given to the hymn of Zacharias (Luke i. 68), a portion of the mass service in the Church of Rome commencing *Benedictus qui venit*, following the Sanctus.

BENEDIC'TION: solemn invocation of the divine blessing upon men or things. The ceremony in its simplest form may be considered almost coeval with the earliest expressions of religious feeling. We know from the Holy Writ that the Jewish patriarchs before they died invoked the blessing of God upon their children, and at a later period the priests were commanded to implore the divine blessing upon the people. Christ sanctioned the custom, which was consequently carried forward into the primitive church, where it gradually developed itself in various forms. In the eastern as well as the western church, it is considered an essential preliminary to almost all important acts. One of the most superb spectacles that a stranger at Rome can witness occurs on Easter Sunday, when the pope, attended by his cardinals, pronounces after mass a solemn B. *urbi et orbi* (on the city and the world). The B., however, is not confined to a form of prayer, but is accompanied with sprinkling of holy water, use of incense, making the sign of the cross, etc. The chief cases in which a B. is bestowed are—the coronation of kings and queens, the confirmation of all church dignitaries, and the consecration of church vessels, bells, and sacred robes; the nuptial ceremony, the absolution, and the last sacrament. The most solemn form of B. in the Roman Church is that 'with the Most Holy Sacrament,' which is administered by the bishop or priest with the monstrance or ostensory containing the consecrated elements. Besides these, lands, house, cattle, etc., often receive a B. from the priest. B. pronounced by the minister is usually the last utterance in Christian assemblies. In the Greek Church, when the B. is being pronounced, the priest disposes his fingers in such a manner as to convey symbolically to the faithful who are close enough to observe the arrangement, the doctrine of the Trinity and the twofold nature of Christ.

BENEDICTUS, *bĕn-ė-dĭk'tus:* a portion of the service of the mass of the Roman Church: also the so-called 'canticle of Zachary' (Luke i. 68–79), used in the Roman service of matin-lauds, and thence adopted into the Anglican morning service. It begins, 'Blessed be the Lord God of Israel.'

BENEFACTION, n. *bĕn'ĕ-făk'shŭn* [L. *bĕnefactĭōnem,* a benefaction—from *bĕnĕ,* well; *factus,* done]: the doing good to another; a benefit or good conferred; a charitable donation. BEN'EFAC'TOR, n. *-tėr,* one who bestows a benefit or good. BEN'EFAC'TRESS, n. a woman who confers a benefit.

BENEFICE, n. *bĕn'ĕ-fĭs* [F. *bénéfice,* a benefit—from L. *benefic'ĭŭm,* a favor—from L. *bĕnĕ,* well; *faciō,* I make or do]: an estate granted through favor or kindness; a church-living or preferment. BENEFICED, a. *bĕn'ĕ-fĭst,* possessed of a church-living. BENEFICENCE, n. *bĕ-nĕf'ĭ-sĕns,* active goodness; the practice of doing kindness to those in need. BENEF'ICENT, a. *-sĕnt,* kind; charitable. BENEF'ICENTLY, ad. *-lĭ.* BENEFICIAL, a. *bĕn'ĕ'fĭsh'ăl,* useful; profitable; helpful. BEN'EFICI'ALLY, ad. *-lĭ.* BENEFICIARY, n. *bĕn'ĕ-fĭsh'ĭėr-ĭ,* one who receives anything as a gift; one who holds a benefice: also, see TRUST. BENEFIT, n. *bĕn'ĕ-fĭt* [OF. *bienfit;* F. *bienfait*—from L. *benefac'tum,* a kindness conferred]: anything tending to the good of another; a favor; profit: V. to do good to; to gain advantage from. BEN'EFITING, imp. BEN'EFITED, pp. *-fĭt-ĕd.* BENEFIT OF CLERGY, a privilege once enjoyed by persons in *holy orders,* and, as well by all who could read, of being exempted from the punishment of death, and only burned in the hand if convicted of certain crimes.—SYN. of 'beneficial': useful; profitable; advantageous; helpful; medicinal;—of 'beneficent': bountiful; bounteous; munificent; generous; liberal; benevolent;—of 'benefit, n.': profit; advantage; use; avail; service; favor; kindness; civility.

BENEFICE, *bĕn'ĕ-fĭs,* or BENEFICIUM, *bĕn-ĕ-fĭ'shi-um:* in especial, a provision made for an ecclesiastical person. Formerly applied to feudal estates, it is now used to denote certain kinds of church preferment in the Church of England, such as rectories, vicarages, and other parochial curés, as distinguished from bishoprics, deaneries, and other ecclesiastical dignities or offices. In this sense a distinction is taken between *benefices* and *cathedral preferments;* by the former being meant all parochial or district churches, and endowed chapels and chapelries; by the latter, all deaneries, archdeaconries, and canonries, and generally all dignities and offices in any cathedral or collegiate church, below the rank of a bishop. See note in 3 Stephen's *Com.* p. 27. By laws comparatively recent the term B. is explained to mean B. *with the cure of souls and no other,* anything in any other act to the contrary notwithstanding. Benefices are also *exempt* or *peculiar,* by which is meant that they are not to be under the ordinary control and administration of the bishop; but it is now provided that such exempt or peculiar

benefices shall nevertheless, and so far as relates to pluralities and residence, be subject to the abp. or bp. within whose province or diocese they are locally situated.

BEN'EFIT OF CLER'GY: privilege formerly pertaining to persons in holy orders—indeed to all who could read, who then were deemed educated—of being exempt from the punishment of death at the hands of the secular magistrate. Practically it amounted almost to exemption from any penalty of the civil law. A priest could be held in custody by the king himself; but even in that case, he could be kept in such regal custody only with the pleasure and consent of the bishop, who had entire control over his person, and over the inquiry into his offense. If a priest or 'clerk' happened to be imprisoned by the secular arm, on a criminal charge or capital felony, he was, on the bishop's demand, to be instantly delivered up without any further inquisition; not, indeed, to be let loose upon the country, but to be detained by the bishop, till he had either purged himself from the offense, or, having failed to do so, had been degraded and so made amenable to the secular law; and this state of things continued till the reign of Henry VI., when it was settled that the prisoner should first be arraigned, and might either then claim his Benefit of Clergy by plea declining the jurisdiction, or, as was most usually practiced, after conviction, by way of arresting judgment. But in the course of time a much more comprehensive criterion was established, all who could *read*, whether of the clergy or laity—a mark of great learning in those days—and who were therefore capable of becoming clerks, being allowed the privilege. But laymen could claim it only *once*, and upon so doing, were burned on the hand, and discharged; to be again tried, however, by the bishop, whose investigation resulted usually in an acquittal, which, although the offender had been previously convicted by his country, or perhaps by his own confession, had the effect of restoring him to his liberty, his credit, and his property—in fact, the episcopal acquittal so entirely whitewashed him, that in the eye of the law he became a new and innocent person. But in the reign of Anne the Benefit of Clergy was extended to all persons convicted of clergyable offenses, whether they could read or not; and by the same statute and several subsequent ones, instead of burning on the hand, a discretionary power was given to the judge to inflict a pecuniary fine or imprisonment. But all further attempts to modify and improve the law on this subject proving impracticable, the Benefit of Clergy was at last totally abolished, in the reign of George IV. (see 7 and 8 Geo. IV. c. 28); and now by the 4 and 5 Vict. c. 22, the same is the law with regard to the peers. See Kerr's *Blackstone*, vol. iv., Reeve's *History of the English Law;* and Pollock and Maitland, *History of English Law.* This privilege had never any existence in Scotland.

BEN'EFIT SOCI'ETIES: name in Great Britain for associations for mutual benefit, chiefly among the laboring

classes: better known as FRIENDLY SOCIETIES (q.v.).—See also BUILDING AND LOAN ASSOCIATIONS.

BENEKE, *bā'nĕ-kē*, FRIEDRICH EDUARD: 1798–1854, Mar.; b. Berlin: prof. of philosophy in Berlin. He studied theology and philosophy, first at Halle, then at Berlin; and 1820, he began lecturing in the latter university, but his lectures were soon interdicted by the minister Altenstein, as his philosophical views were quite opposed to those of Hegel. After a few years his lectures were again allowed, and on Hegel's death, 1832, he was appointed extraordinary prof. of philosophy. In 1854, March, B. disappeared suddenly from his residence, and nothing more was heard of him until 1856, June, when his body was found in the canal at Charlottenburg, where he had sought his death. B. has more affinity with British thinkers than any other German philosopher. He holds that the only possible foundation for philosophy lies in a strict adherence to the facts of our consciousness. His system of psychology is therefore what the Germans call 'empirical,' and his method is the Baconian as pursued in natural science. Of his numerous writings may be mentioned *Psychologische Skizzen* (2 vols. 1825–27); *Lehrbuch der Psychologie als Naturwissenschaft* (Text-book of Psychology as a Natural Science, 2d ed. 1845); *System der Logik* (2 vols. 1842); *Erziehungs-und-Unterrichtslehre* (A Treatise on Education, 1842); *Erfahrungsseelenlehre, als Grundlage alles Wissens in ihren Hauptzugen dargelegt* (1820); *Pragmatische Psychologie oder Seelenlehre in der Anwendung auf das Leben* (1850).

BENEMPNE, or BYNEMPNE, v. *bĭ-nĕm'nĕ* [AS. *be, nemnan*, to name, to call upon: OE. *nempne*, to name]: in *OE.*, to name; to promise. BYNEMPT, pp. *bĭ-nĕmt'*, pronounced; promised.

BENET, v. *bĕ-nĕt* [*be*, and *net*, which see]: in *OE.*, to surround with toils; to ensnare.

BENEVENTO, *bĕn-ā-vĕn'tō* (ancient *Beneventum*): city of s. Italy, cap. of the province of B. It occupies the site of the ancient city, out of the materials of which it is entirely built, on the declivity of a hill, near the confluence of the Calore and Sabato, about 32 m. n.e. of the city of Naples. B. is about two m. in circumference, is surrounded by walls, has a citadel, a fine old cathedral, some noteworthy churches, and a magnificent arch, erected to the honor of the Emperor Trajan, by the senate, 114, which, with the single exception of that of Ancona, is the best preserved specimen of Roman architecture in Italy. It is an archiepiscopal see. B. is a place of very great antiquity. Some writers attribute its origin to Diomed, and in the cathedral is a bas relief representing the Calydonian boar adorned for sacrifice, said to be the gift of the Greek hero himself. Other old writers give the credit of its origin to Auson, a son of Ulysses and Circe. It was, however, in the possession of the Samnites, when history first takes notice of it, and it appears to have been captured

from them by the Romans, some time during the third Samnite war. In B.C. 275, a battle occurred between Pyrrhus, King of Epirus, and the Romans under Curius Dentatus, the consul. The combat was commenced and contested with the same ardor and obstinacy on both sides. At length, when the consul seemed to be getting the advantage over his enemy, Pyrrhus let loose his elephants against the Romans, who were already fatigued by the combat. It was by means of these monsters that the Romans had been defeated in former engagements, and they again recoiled until they reached their reserves, which the consul had prudently stationed on an elevation in the rear. There they found time to rally and renew the battle in an advantageous position. Having perceived that the sword and arrows frightened the elephants far less than fire, the Romans now began to throw projectiles loaded with combustibles and accompanied by flaming cords of pitched tow. The elephants were soon so terrified that they turned back maddened and furious, and trampled down the Greeks instead of the Romans. Pyrrhus tried in vain to recall his soldiers to duty. Repulsed by the Romans, and crushed by their own elephants, they were totally routed. Pyrrhus himself made a narrow escape with a few of his horsemen. The Romans entered the camp of the enemy, examined it, and there learned how to encamp a whole army in one circle of intrenchments. B. was certainly in the hands of the Romans B.C. 274, who changed its name from Maleventum to Beneventum, six years later, and made it a Roman colony. The Carthaginians, under Hanno, were twice decisively defeated in the immediate neighborhood, during the second Punic war. It rapidly rose to a place of importance under the Roman empire, and was visited at various times by several of the emperors.

Under the Lombards, who conquered it in the 6th c., B. continued to flourish, and became the capital of a duchy which included nearly the half of the late kingdom of Naples. In the 9th c. the duchy was separated into three states—B., Salerno, and Capua. In 1077, the whole was taken possession of by the Normans, excepting the town and its present delegation, which had previously (1053) been presented to the pope by the emperor Henry III.

In 1266 a battle took place here between Charles of Anjou, who favored the pope, and the partisans of the house of Swabia, commanded by Manfred.

During the 11th and 12th c., four councils were held at B. Thenceforward, until 1860, when it was united with the kingdom of Italy, B. remained, with slight intervals, governed through a resident cardinal with the title of legate. In 1806, it was made a principality by Napoleon, with Talleyrand as Prince of B.; but it was restored to the pope 1815. In 1848–9, B. was faithful to the pope. Pop. (1901) 24,650.

BENEVOLENCE, n. *bĕ-nĕv'ŏ-lĕns* [OF. *bénévolence*—from L. *benevŏlĕn'tĭă*, good-will—from L. *bĕnĕ*, well; *vŏlō*, I

wish]: good-will. Benevolence as a moral virtue in the sense of a desire for the happiness and well-being of all mankind is rather distinctly a Christian ideal. The Greeks commended justice and friendship, but not general benevolence in the manner characteristic of Christian teachings. BENEV'OLENT, a. kind; possessing the desire to do good. BENEV'OLENTLY, ad. *-lĭ.*—SYN. of 'benevolence': beneficence; benignity; humanity; kindness; tenderness; munificence.

BENEVOLENCE, in the history of the law of England: a species of forced loan, arbitrarily levied by the kings in violation of Magna Charta, and in consequence of which it was made an article in the Petition of Rights, 3 Car. I., that no man shall be compelled to yield any gift, loan, or B., tax, or such like charge, without common consent by act of parliament; and by the statute 1 Will. and Mary, st. 2, c. 2, it is declared that levying money for or to the use of the crown, by pretense of prerogative, without grant of parliament.

BENEZET', ANTHONY, American Quaker philanthropist; b. St. Quentin, France 1713, Jan. 31; d. Philadelphia, 1784, May 3. His family came to Philadelphia from London in 1731. He earnestly opposed the slave trade, advocated the emancipation and education of the colored population of the colonies, and himself opened an evening school for negroes. Of his numerous tracts, distributed gratuitously, the most important are: *A Caution to Great Britain and Her Colonies, in a Short Representation of the Calamitous State of the Enslaved Negroes in the British Dominion* (1767); *Historical Account of Guinea* (1772); *A Short Account of the Society of Friends* (1780); *Dissertation on the Christian Religion* (1782); *Observations on the Indian Natives of this Continent* (1784).

BENFEY, *bĕn'fi.* THEODOR, German Orientalist and comparative philologist: b. of Jewish parents, Nörlen, Hanover, 1809, Jan. 28; d. 1881, June 26. He studied in Göttingen, Munich, Frankfort, and Heidelberg, devoting himself especially to classical and comparative philology. In 1862 he was appointed to the chair of Sanskrit and comparative philology in the University of Göttingen, which he held till his death. One of his earliest literary efforts was a translation of *Terence* (Stuttgart 1837); after this, however, he turned his attention almost exclusively to comparative philology, Oriental languages, especially Sanskrit, and mythology. In his 50 years devoted, with rare enthusiasm and persistency, to linguistic studies, he did more than any other scholar to enlarge the boundaries of Sanskrit philology. In comparative philology, though an adherent of Bopp, he deviated from his master in deriving all Indo-European words from mono-syllabic primitive verbs. This conception depends on his theory of the origin of stem suffixes. These, he holds, are almost all derived from a fundamental form, *ant,* which appears in the present participle of verbs. To support this view he assumes the most violent permutations

of sounds, which set all phonetic laws at defiance. For his theory see his *Lexicon of Greek Roots* (1839); *Short Sanskrit Grammar* (1868), and numerous essays. In Sanskrit he laid a foundation for the true study of the Veda by editing the *Sâma Veda* (1848), with glossary and translation; and this work he continued by a scholarly translation of the first *mandala* of the Rig Veda in his magazine, *Orient and Occident* (1863–4). His Vedic grammar, for which he had been collecting materials for many years, was left unfinished. He also published a *Complete Sanskrit Grammar, Crestomathy and Glossary* (1854), and a *Sanskrit-English Dictionary* (1866). In comparative folklore his principal work is a translation of the *Panchatantra* (1859).

BENGAL, n. *bĕn'gawl*, a thin stuff made of silk and hair, so called from Bengal, in India, where first made. BENGAL LIGHT, a firework used for signals, or in illuminations. BENGAL-STRIPES, a Bengalese striped cotton cloth. BENGALEE, n. *bĕn'gâ-lē'*, the language of Bengal. BENGALESE, n. sing. or plu. *bĕn'gâ-lēz'*, a native of Bengal.

BENGAL, *bĕn-gawl':* term formerly denoting a 'presidency' of British India, now ordinarily denoting the administrative province so called. In 1765, the soubah or viceroyalty of this name was, with Bahar and part of Orissa, ceded by the Great Mogul, virtually in full sovereignty, to the English East India Company. As a natural consequence of this acquisition of territory, the presidency of Calcutta, which had been separated from that of Madras in 1707, came to be styled the presidency of Bengal. Moreover, in 1773, this, the youngest of three distinct governments of British India, was elevated above both its older rivals by an act of parliament, which declared its immediate ruler to be *ex officio* the gov.gen. of the whole of the company's dominions. With its commanding position on and around the delta of the Ganges, and the Brahmaputra, B., as a presidency, grew almost uninterruptedly alike to the n.w. and to the s.e.—far beyond the basins of its own mighty rivers. Within less than 90 years, it had overleaped, without a break in its continuity, at once the Irrawaddy and the Indus. Benares, in the one direction, was the first considerable increment, having been absorbed 1775; while the last addition of importance—unless Oudh be excepted, which, however, had really become British in 1801—was Pegu, in the other direction, the Burmese war of 1852 filling up the gap on the coast which that of 1826 had still left between Assam and Aracan on the n., and Tenasserim on the s. From Tenasserim to the Punjab inclusive, B., as a presidency, embraced about 29° of long., and about 21° of lat. Further, it comprised, to the s.e. the detached settlements of Penang, Malacca, and Singapore; while to the n.w. it might, for a time at least, have claimed Afghanistan. The whole of this vast tract was, either directly or indirectly, under the immediate

rule of the gov.gen., advised, and in some cases controlled, by a council of five members, of whom one was the commander-in-chief, and at least one other was not to be a company's servant.

Some time ago, the presidency of B., having proved too extensive for a consolidated administration, was divided into three portions—one portion remaining under the gov. gen., and two being assigned to subordinate functionaries, the lieut.govs. respectively of 'The Northwestern Provinces,' and of 'Bengal.' The first portion, under the direct sway of the gov.gen., consisted of the Punjab (q.v.); the Cis-Sutlej states, four in number—Oudh, Nagpur, Pegu, Tenasserim; and the three detached settlements already mentioned in and near the Straits of Malacca. The two other portions, occupying, between them, the entire space from Pegu to the Cis-Sutlej states, met near the confluence of Gogra and the Ganges, Patna being in 'Bengal,' and Benares in 'The Northwestern Provinces.' The 'presidency' of B. is no longer an administrative division; the territory over which the lieut.gov. of B. now rules is very nearly what used to be known as Lower B., and comprises B. Proper, Bahar, Orissa, including the tributary Mehals, Chota Nagpur, and the native states of Hill Tipperah and Kooch Bahar. The Northwest Provinces are no longer included in the government of B.; the Punjab has likewise an independent lieut.gov.; Oudh is under a chief commissioner; Pegu and Tenasserim are embraced in British Burmah; and since 1874 Assam too has its own chief commissioner.

According to the census of 1901, the areas and populations of the four great provinces that constitute B. in the wider sense, and are under the administration of the lieut.-gov. of B., are as follows:

	Sq. Miles.	Pop. 1881.	Pop. 1901.
Bengal Proper	70,538	35,607,628	41,259,982
Behar	44,186	23,127,104	24.241,305
Chota Nagpur	26,966	4,225,989	4,900,429
Orissa	9,853	3,730,735	4,343,150
Total	151,260	66,691,456	74,744,866

A new political adjustment of Bengal has more recently been effected. It should be cited also in reference to the above account that in 1902 the Northwest Provinces and Oudh were united and called the United Provinces of Agra and Oudh. In 1905, fifteen districts of Bengal lying east of the Ganges were detached from that province and added to Assam, forming the new province of Eastern Bengal and Assam. At the same time one district from the Central Provinces was added to Bengal. The reëstablished area of this province is 115,819 sq. m. and the population 50,750,000. The difference from the above table indicates practically the amount in area and population taken from Bengal proper. The province of Bengal now occupies the valley of the Ganges east of Benares, and extends from the Himalayas to the mouth of the Mahanuddy.

BENGALI ERA: one of the chronological eras of the Hindus supposed to have been derived from the Hegira (q.v.). But as the Hindus use the sidereal year and the Mohammedans the lunar, the Bengali epoch is at present some 9 years behind the Mohammedan.

BENGAL' LIGHT, Blue Light, or Bengal Fire: a brilliant signal-light used at sea during shipwreck, and in ordinary pyrotechny for illuminating a district of country. It is prepared from nitre, sulphur, and the tersulphuret of antimony. The materials are reduced to fine powder, thoroughly dried and intimately mixed in the following proportions by weight: nitre, 6; sulphur, 2; tersulphuret of antimony, 1. The mixture, kindled by a red-hot coal, red-hot iron, or flame, immediately bursts into rapid and vivid combustion, evolving a brilliant, penetrating, but mellow light, which, during the darkness of night, readily overcomes the gloom for a considerable space. As the fumes evolved during the combustion of the Bengal Light contain an oxide of antimony, and are poisonous, the light cannot be used with safety in rooms or inclosed spaces.

BENGAZI, *bĕn-gä'zē:* seaport town of Barca, n. Africa, finely situated on the e. coast of the Gulf of Sidra: lat. 32° 6′ n., long. 20° 2′ e. Its people trade with Malta and Barbary in oxen, sheep, wool, and corn. It has a castle, the residence of a bey, who governs it for the pasha of Tripoli. Its harbor is rapidly filling up with sand. Here are English, French, and Italian consuls. Pop. abt. 15,000.

BENGEL, *bĕng'ĕl,* Johann Albrecht: 1687, June 24—1752, Dec. 2; b. Winnenden, Würtemberg: distinguished German theologian and commentator, whose writings have exercised considerable influence in America. His early life was checkered by many vicissitudes. After completing his theological curriculum, 1707, he became curate of Metzingen; a year afterwards, he was appointed theological tutor at Tübingen. Later in life, he held several high offices; among others, that of consistorial councilor and prelate of Alpirsbach, in Würtemberg, where he died. He was the first Protestant author who treated the exegesis of the New Test. in a thoroughly critical and judicious style. He did good service also in the rectification of the text, and was the first to propound the theory of families or recensions of MSS. He classified the documents in two divisions—the African, for older family; and the Byzantine, or more recent. This theory was adopted by Semler and Griesbach, and worked out into an elaborate system by the latter critic. The short notes in his *Gnomon Novi Testamenti* (Tübingen, 1742) have been translated into various languages, and were used by John Wesley in his well-known *Notes on the New Testament.* His books, *An Exposition of the Revelation of St. John* (Stuttgart, 1760), and *Ordo Temporum a Principio per Periodes Æconomiæ Divinæ Historicus atque Propheticus* (Tübingen, 1741), gained for B. a great reputation.

BENGOUGH, John Wilson, Canadian poet: b. Toronto 1851, April 5. In 1873 he established the *Grip*, a humorous weekly in Toronto. His political cartoons in this paper were highly artistic. He is also widely known as a lecturer and a poet. His publications include: *Ontario, Ontario* (a famous election song); *Grip's Cartoons* (1875); *Popular Readings, Original and Selected* (1882); *Caricature History of Canadian Politics* (1886); *Motley: Verses Grave and Gay* (1895); *The Up to Date Primer: A First Book of Lessons for Little Political Economists* (1896); etc.

BENGUELA, *bĕn-gā'lă:* one of the five districts into which the Portuguese possession of Angola, W. Africa, is divided, the others being Congo, Loanda, Mossamedes, and Lunda. It lies about between lat. 9° and 16° s., and long. 12° and 17° e. The river Coanza washes it on the n., the mountains behind Cape Negro bound it on the s., and the Atlantic Ocean on the w. Its surface is generally mountainous, rising from the coastline inland, in terraces; several important rivers flow through it in a n.w. direction to the Atlantic. These rivers have numerous affluents, and water is everywhere so plentiful that it may be found by digging two ft. beneath the surface. Vegetation of the most luxuriant and varied description is the consequence of this humidity. The fruit-trees, both of tropical and subtropical climates, thrive extremely well. The inhabitants, however, are too ignorant or indolent to take advantage of the productiveness of the soil. Animals of all kinds common to western Africa abound in B., both on land and in water. Peacocks are said to be accounted sacred in B., and kept tame about the graves of the great chiefs. Sulphur, copper, and petroleum are found in the mountains, also gold and silver in small quantities. The coast is usually unhealthful, but the interior is more salubrious. B. is inhabited by a variety of petty tribes, some of which are cannibals, and barbarous beyond even the common barbarism of Africa. As might be anticipated, religion exists only in the form of Fetichism. The town of B. is an important seaport.

BENGUE'LA, St. Philip de: Portuguese cap. of Benguela; on the Atlantic, near the mouth of the river Catumbella; lat. 12° 33′ s., long. 13° 25′ e. It is pleasantly situated and fairly healthy. It exports rubber, coffee, skins, ivory, etc. A short railway starts from the town, the population of which is about 3,000.

BENHAM, A. E. K., rear-admiral, U. S. N.: b. New York, 1832, April 10; d. Lake Mahopac, 1905, Aug. 11. He entered the navy 1847; graduated from Annapolis 1853. Commissioned lieut., B. was in the battle of Port Royal; in 1862, promoted lieut. commander, served in blockade of Gulf of Mexico. Advanced to commander (1867), he served at Brooklyn navy yard. As capt. (1875) of the *Richmond* he went to Asia. In 1885, was made commodore and had charge of Mare Island navy yard. Pro-

moted rear-admiral, he commanded the N. Atlantic squadron till 1893, and afterward did important service in S. America. He was retired 1894, Apr. 10.

BENI, *bā-nē′*: river of S. America, in the state of Bolivia, formed by the junction of all the streams that rush down from the eastern Andes between 14° and 18° s. lat. Flowing through the dept. of its own name, it joins the Mamore to form the Madeira, one of the largest affluents of the Amazon. Length about 900 miles.

BENICIA, *bē-nĭsh′ĕ-ȧ*: a town of Solano co., Cal., formerly the state capital; on Carquinez Strait (which connects Suisun and San Pablo bays), 30 m. n.e. of San Francisco. It is at the head of navigation for large steamships, and contains the machine-shops and the large depot of the Pacific Mail Steamship Co. It has also a U. S. arsenal, the Missionary College of St. Augustine (Prot. Episc.), three churches, a young ladies' seminary, a monastery, a convent, an academy, and several newspapers. Pop. 3,000.

BENIGHT, v. *bĕ-nīt′* [*be*, and *night*): to overtake with darkness. BENIGHT′ING, imp. BENIGHT′ED, pp.: ADJ. involved in darkness, ignorance, or superstitution.

BENIGN, a. *bĕ-nīn′* [F. *bénin*—from OF. *benigne*—from L. *benig′nus*, kind—from L. *bĕnĕ-genĭtus*, well-begotten—*lit.*, of or from a good race]: of a kind and gentle disposition; gracious; salutary. BENIGNANT, a. *bĕ-nĭg′nănt*, kind; gracious. BENIG′NITY, n. *-nĭ-tĭ* [F. *bénignité*—from L. *benĭgnĭtātem*]: kindness; goodness of heart. BENIGNLY, ad. *bĕ-nīn′lĭ*, kindly; favorably. BENIG′NANTLY, ad. *-lĭ*.—BENIGN TUMOR, in *med.*, not life-destroying; in contradistinction from malignant or life-destroying tumor.—SYN. of 'benign': liberal, gracious; kind; propitious; generous; favorable; salutary; benignant;—of 'benignity'—see BENEVOLENCE.

BENI-HASSAN, *bā-nē-hăs′sĕn*: village of middle Egypt, on the e. bank of the Nile; lat. 27° 53′ n., long. 30° 55′ e. The place is remarkable for the numerous grottoes in its vicinity, among the most interesting in Egypt. These catacombs are excavated in the calcerous bank—apparently at one time washed by the Nile, now flowing further w.—in which some low hills terminate. Of the catacombs, numbering about 30, supposed to have been used as sepulchres, some have three apartments, the largest 60 by 40 ft.; and pillars are cut out of the rock in imitation of the columns that support the roofs of buildings. These shafts are polygons of sixteen sides, fluted except on the inner side, which is left smooth for a line of hieroglyphics. They are usually about 16 ft. high, and from 3 to 5 ft. in diameter at the base. The sides of the caverns are covered with paintings representing the industrial pursuits, sports, pastimes, etc., of the ancient Egyptians. The paintings, though not so artistic as those in the Theban catacombs, are of earlier date, and throw much light on the manners and customs of the people. They date from 3,000-2,500 B.C.

BENI-ISGUEN, *bā′nē-ĭs-gĕn′:* large town in the interior of Algeria, surrounded by a rampart, flanked with towers, and said to be nearly as populous as Algiers. It has some trade in grain.

BENI-ISRAEL: Native Jews of India, who have recently been brought into connection with the Jews of the world. Formerly they were known by the name of 'Saturday Oil Pressers,' from their Sabbath-day and their chief calling. In their traditions they trace their descent to Jews who in their flight from persecution were wrecked near some islands in the Indian ocean, 15 miles from Cheul, once the centre of trade between Arabia and India. The seven men and seven women who escaped death by drowning were the progenitors of the Beni-Israel—the incident occurred from 1600 to 1800 years ago. Christian missionaries in India were the first to bring them to the knowledge of Europeans, together with information as to the White and Black Jews of Cochin on the coast of Malabar, at the beginning of the past century. The interest taken in them by Jews of England and the West in general, and the progress of education among them, can be traced to the arrival of the Sassoon family in Bombay. The Beni-Israel refer to two periods of religious revival in their history—about 1000 due to David Rahabi, who was a Jew from Cochin, and in 1796 due to Samuel Divekar, who a Beni-Israel soldier in the British service vowed that if he escaped from his captor Tipo Sahib, he would erect a synagogue in Bombay. Effecting his escape he built a synagogue and introduced the Sephardic ritual from Cochin. In 1812 Michael Sargon was brought to Bombay by Christian missionaries, and for more than three decades opened schools for the Beni-Israel, without any effort to convert them to Christianity. Solomon Shurrabi, who was wrecked near Bombay about 1836, labored for 20 years as religious teacher to familiarize them with Judaism. With the arrival of the Sassoons, however, they became more closely identified with their coreligionists, and a school was opened for them which received aid from the Anglo-Jewish Association.

The Beni-Israel have furnished many British soldiers, some of high rank, and a few representatives of the learned professions. According to the census of 1891, they numbered in the Bombay presidency 7,000 souls, 5,000 residing in Bombay. Many works for the liturgy and instruction have been translated into Mahrati for the benefit of Beni-Israel and several newspapers have been issued. In appearance they resemble their neighbors, and seem proud of their descent, while they are now scrupulous in their religious observances and have several synagogues in Bombay. Until the revival under Divekar they knew little of Jewish customs.

BENIN, *bĕn-ēn′:* a former negro kingdom in Western Africa, on the bight of B., annexed to Southern Nigeria 1897. It derives its name from the w. arm of the Niger—formerly supposed to be a main river, and styled *Benin* or

Formosa—which leaves the Niger at Kirii, and, after a course of about 115 m., forms an embouchure two m. wide. The country of B. is bounded on the n.e. and the e. by the Niger; on the s. by the Bay of Benin, into which Cape Formosa is projected; on the w. by Dahomey; on the n.w. by Yariba. The coast is indented by numerous estuaries, and is generally level; but the land gradually rises towards the n., until it reaches an elevation of 2,500 ft. in the Kong Mountains. The soil is very fertile, producing cotton, rice, yams, palms, sugar, etc. The animals are the same as in other parts of Guinea, but the hippopotamus is more common. The population was once so dense that the king—who was worshipped as a great *fetich*—could, in its most flourishing days, bring into the field an army of 100,000 men. The government, customs, and superstitions of B. are like those of Ashantee. The kingdom has declined, and a large part has been broken up into independent states. The capital, Benin, in lat. 6° 20′ n., long. 5° 50′ e. has considerable trade. At Gato, a harbor lower down the river, where the traveller Belzoni died, European merchants formerly had factories. Warree is another principal place. The export trade of B. consists of palm-oil, salt, blue coral, jaspar, wild-beast skins, slaves, etc. B. was discovered by the Portuguese Alfonso de Aveiro, 1486. In 1786, the French founded settlements at the mouth of the river which were destroyed by the British, 1792.

BENIN, Bight of: that portion of the Gulf of Guinea (q.v.) extending from Cape Formosa on the e. to Cape St. Paul's on the w., about 390 m., with a coast-line of 460 m. Several rivers empty into the Bight, the three principal of which, Benin, Escardos, and Forcados, are accessible to shipping. The coast along the Bight was blockaded, 1851, by the British fleet engaged in the suppression of the slave trade. Palm-oil and ivory are the principal articles of trade at the towns on the coast.

BENISON, n. *bĕn′ĭ-zn* [OF. *beneison* or *benoison*, benediction—from F. *bénir*, to bless: L. *benĕdĭctĭōnem*—from *bĕnĕ*, well; *dictus*, spoken]: blessing; benediction.

BENI-SOUEF, *bĕn-ē-swĕf:* town of central Egypt, on the right bank of the Nile, about 70 m. s.s.w. of Cairo; one of the stations where travellers making the tour of Egypt usually stay. It is the entrepôt of all the produce of the fertile valley of Fayoum, and has cotton-mills and alabaster quarries. Pop. 10,085; prov. 219,573.

BENITIER, *bā-nē-tē-ā*, or Benatura: the vase or vessel in which consecrated or 'holy water' is held in Rom. Cath. churches. In England, the B. was known by the name of the 'holy-water font,' the 'holy-water vat,' the 'holy-water pot,' the 'holy-water stone,' the 'holy-water stock,' and the 'holy-water stoup.' Benitiers were either movable or fixed. Portable ones, commonly of silver, were used in processions. Fixed benitiers were placed near the doors of churches, so that the people might dip

their fingers in the water, and cross themselves with it as they entered or left the church.

BENJAMIN, n. *běn'jă-mĭn:* common name of the gum BENZOIN, of which *benjamin* is a vulgar corruption: see under BENZOATE. BENJAMIN TREE: see BENZOIN.

BENJAMIN, *běn'ja-mĭn* (a Hebrew proper name, signifying 'Son of my Right Hand,' or 'Son of Good Fortune'): youngest and most beloved of the sons of Jacob. He was the head of one of the twelve tribes of Israel. The tribe in the desert reckoned 35,400 warriors above 20 years of age; and on the entrance into Canaan, 45,600. In the time of 'the Judges,' the tribe of B. became involved in war with the eleven other tribes of Israel, and all the male descendants of B. were put to the sword (Judges xx., xxi.), excepting 600. Saul, the first king of Israel, was of the tribe of B., which remained loyal to his son, Ishbosheth. After the death of Solomon, B., with Judah, formed the kingdom of Judah; and on the return from the Captivity, these two constituted the principal element of the new Jewish nation.

BENJAMIN, CHARLES HENRY, American engineer: b. Patten, Me., 1856, Aug. 29. He graduated at the University of Maine, and was professor of mechanical engineering there, 1880–6. Since 1889 he has been professor of the same subject in the Case School of Applied Science, Cleveland, Ohio. Publications: *Notes on Heat and Steam* (1894); *Notes on Machine Design* (1895); *Mechanical Laboratory Practise* (1898); *Evolution of the Machine Tool* (1898); *Power Losses in Machine-Shops* (1900); *Development of Fly Wheels* (1900); and monographs in the *Transactions* of the American Society of Mechanical Engineers, Vols. xviii.–xxi.

BENJAMIN, JUDAH PHILIP, American lawyer: b. St. Croix, West Indies, 1811, Aug. 11; d. Paris, 1884, May 7; of English parentage and of Jewish faith. He was educated at Yale College; admitted to the bar in New Orleans in 1832; and elected to the United States Senate in 1852 and 1858. At the beginning of the Civil War he resigned from the Senate and declared his adhesion to the State of Louisiana. In 1861 he accepted the office of attorney-general in the Cabinet of Jefferson Davis, and afterward became successively Confederate secretary of war and secretary of state. After the war he went to London, England, where he was admitted to the bar in 1866. He gained a successful practice, and in 1872 was formally presented with a silk gown. He wrote a *Treatise on the Law of Sale of Personal Propoerty* (1868).

BENJAMIN, MARCUS, American editor and compiler: b. San Francisco, 1857, Jan. 17. He graduated at Columbia School of Mines, 1878, and was chemist at the United States Appraiser's Store, New York, 1883–5. Since 1883 he has been a regular contributor to *Appleton's Annual Cyclopædia* and the *Cyclopædia of American*

PARK BENJAMIN.

Biography and edited a number of the Appleton guides and handbooks. He was on the editorial staff of the *Standard Dictionary; Encyclopædic Dictionary; Johnson's Universal Cyclopædia;* and the *International Year Book;* and has translated Bertholet's *Explosive Materials* (1883). Since 1896 he has been connected with the United States National Museum.

BENJAMIN, Park, American journalist, poet, and lecturer: b. Demerara, British Guiana, 1809, Aug. 14; d. New York, 1864, Sept. 12. He studied law, but later took up literary work, helping to found *The New World* in New York. His poems, of a high order of merit, have never been collected. *The Contemplation of Nature,* read on taking his degree at Washington College, Hartford, 1829; the satires, *Poetry* (1843); *Infatuation* (1849): *The Nautilus; To One Beloved;* and *The Old Sexton* are among his works. He was associated editorially with Epes Sargent and Rufus W. Griswold.

BENJAMIN, Park, American lawyer, editor, and miscellaneous writer, son of the preceding: b. New York, 1849, May 11. A graduate of the United States Naval Academy (1867), he served on Admiral Farragut's flagship, but resigned in 1869. As a lawyer he has been a patent expert. He edited the *Scientific American* (1872–8), and Appleton's *Cyclopædia of Applied Mechanics.* He has written *Shakings: Etchings from the Naval Academy* (1867); *The Age of Electricity* (1886); *The Intellectual Rise in Electricity, a History; The United States Naval Academy* (1900); etc.

BEN'JAMIN, Samuel Greene Wheeler: author: b. in Argos, Greece, 1837, Feb. 12. He graduated at Williams College 1859, and was asst. librarian of the N. Y. State Library 1861–64, and U. S. minister to Persia 1883–85. He has published the following books: *Constantinople, Isle of Pearls, and Other Poems* (1860); *Ode on the Death of Abraham Lincoln* (1865); *The Turk and the Greek* (1867); *Tom Roper* (1868); *Muretus's Advice to His Son,* a metrical translation from the Latin (1870); *The Choice of Paris: a Romance of the Troad* (1870); *What is Art?* (1875); *Contemporary Art in Europe* (1877); *Art in America* (1879); *The Multitudinous Seas* (1879); *The Atlantic Islands* (1879); *Our American Artists* (1879); *The World's Paradises* (1880); *Troy: its Legend, Literature, and Topography* (1880); *A Group of Etchers* (1882); *Cruise of the Alice May* (1883); *The Story of Persia* (1886); and *Persia and the Persians* (1886). He has drawn many illustrations for his own books, for magazines, and specially for an illustrated edition of Longfellow's poems. His most important paintings are the following: *Home of the Sea Birds* (1875); *Porta da Cruz, Madeira* (1876); *The Corbière or Sailor's Dread* (1876); *The Wide, Wide Sea* (1877); *Yachts Struck by a Squall* (1879); *Among the Breakers* (1879); and *In the Roaring Forties* (1882).

BENJAMIN OF TUDELA: a Jewish rabbi, b. Navarre, Spain; d. 1173. He was the first European traveler who

gave information respecting the distant East. Partly with commercial views, and partly to trace the remnants of the 'lost tribes,' he made a journey, 1159–73, from Saragossa, through Italy and Greece, to Palestine, Persia, and the borders of China, returning by way of Egypt and Sicily. He died in the last year of his travels. His notes of foreign lands—originally written in Hebrew, and frequently republished in Latin, English, Dutch, and French—are occasionally concise and valuable; but on the whole must be accepted with qualifications. Like all the early travellers, B. had a greedy ear for the marvellous. His errors also are numerous. The latest edition by Asher (London, 1841) contains the original text, with an English translation and learned annotations.

BENJAMIN-CONSTANT, Jean Joseph, *bŏn-zha-măn-kŏn-stŏn, zhŏn zhō-sĕf*, French painter: b. Paris, 1847, June 10; d. there 1902, May 26. He studied under Cabanel, and exhibited in the salon of 1869, a scene from 'Hamlet.' His taste inclined him to Oriental subjects and the nude, and his vivid coloring and dramatic treatment made his work fashionable in Paris and London. His work displays much finished and minute detail, but he paid chief attention to harmony of effect and decorative value. Among his Oriental pictures are *Mahomet II.; Les Chérifas; Les Funérailles de l'Emir; La Justice du Chérif.*

BEN LAWERS, *bĕn law'erz:* mountain in Perthshire, Scotland, about 32 m. w.n.w. of Perth, on the w. side of Loch Tay. This mountain, which is easy of ascent, is rich in Alpine plants, and there is a magnificent view from its summit, 3,984 ft. high, or with the cairn at the top, 4,000 ft. Ore of titanium is found in Ben Lawers.

BEN LEDI, *bĕn lĕd'dē:* mountain in Perthshire, Scotland, 4 m. w.n.w. of Callander, with an elevation of 2,875 ft. It received its name from the Druids, who are supposed to have had a place of worship on its summit—the Gaelic words *Beinn-le-Dia*, signifying 'Hill of God.' This mountain is celebrated in Scott's *Lady of the Lake.*

BEN LOMOND, *bĕn lō'mond:* celebrated Scottish mountain in the n.w. of Stirlingshire, on the e. side of Loch Lomond, about 27 m. w.n.w. of Stirling. This mountain, forming the s. extremity of the Grampians or Central Scottish Highlands, is 3,192 ft. high, and consists of mica slate, with veins of quartz, greenstone, and felspar porphyry. The summit is precipitous on the n. side, with a gentle declivity on the s.e.; it is covered with vegetation to the top. Though considerably surpassed in height by several other Scottish mountains, none are more imposing. Seen from Loch Lomond, it appears a truncated cone, and from between Stirling and Aberfoyle, a regular pyramid. It has perhaps been ascended by a greater number of tourists than any other of the Highland mountains. The magnificent view from the top, in clear weather, includes the whole length (30 m.) of Loch Lomond, with its diversified isles, and wooded and cultivated

shores, the rich plains of Stirlingshire and the Lothians, the windings of the Forth, the castles of Stirling and Edinburgh, the heights of Lanarkshire, the vales of Renfrewshire, Ayrshire, Firth of Clyde, Isles of Arran and Bute, the Irish coast, Kintyre, and the Atlantic. The north semicircle of the horizon is bounded by Bens Lawers, Voirlich, Ledi, Cruachan, and Nevis; while some of the beautiful Perthshire lochs are seen.

BEN MACDHUI, *bĕn măk-dô'ė:* mountain of Aberdeenshire, belonging to the Grampian range, formerly thought the highest in Britain, now known to be second—its elevation being 4,296 ft.

BENNDORF, *bĕn'dŏrf*, Otto, German archæologist: b. 1838, Sept. 13; d. 1907, Jan. 2. He studied at Erlangen and Bonn, went to Italy and Greece, 1864–8, for archæological work, and was professor of archæology at the universities of Göttingen, Zurich, Munich, Prague, and Vienna. In 1875 he made a second archæological tour to Samothrace; in 1881 and 1883 he made two expeditions, at state cost, to southwestern Asia Minor; in 1898 he was made director of the Austrian Archæological Institute. He wrote *The Ancient Sculptures in the Lateran Museum* (in conjunction with Schöne) (Leipsic 1867); *Ancient Historical Helmets and Sepulchral Masks* (1878); *Tramps in Southwest Asia Minor* (1884); etc.

BENNET, or Benet, n. *bĕn'ĕt* [L. *benedictus*, praised or commended F. *benoîte*]: the common name for the *Gĕŭm urbānum*, or herb avens, a medicinal plant.

BENNET, Henry (Earl of Arlington), English statesman: b. Arlington, Middlesex, 1618; d. 1685, July 28. He was devoted to the cause of Charles I., and was appointed under-secretary of state; he fought in several battles, and was wounded at Andover, but after the battle of Worcester he retired to Spain. Upon the restoration he returned to England, and was appointed keeper of the privy seal, and shortly afterward secretary of state. In 1664 he was created Baron Arlington; in 1670 became noted as one of the famous Cabal, but is not accused of entertaining their extreme sentiments; he was created Earl of Arlington in 1672. He was one of the plenipotentiaries sent to Utrecht to negotiate a peace between Austria and France, but the mission not being successful, an endeavor was made by his colleagues to cast the odium of the failure upon him. He defended himself, however, before the House of Commons, and was acquitted. The war with Holland, which is said to have been caused by the machinations of the Cabal, lost to Arlington the favor of the king and people; but in spite of this he received the office of chamberlain. In 1679 he became a member of the new council, and retained his office of chamberlain on the accession of James II.

BENNETT, Alfred Allen, American chemist: b. Milford, N. H., 1850, Nov. 30. He graduated at the University of Michigan 1877; became professor of chemistry

and physics in Iowa Wesleyan University; and since 1885 has been professor of chemistry in Iowa State College. Publications: *Text Book of Inorganic Chemistry*, 2 vols., and articles in the *American Chemical Society Journal.*

BENNETT, Charles Edwin, American educator: b. Providence, R. I., 1858, April 6. He graduated at Brown University 1878; pursued graduate studies at Harvard and in Germany 1881–4; was professor of Latin at the University of Wisconsin 1889–91; of classical philosophy at Brown 1891–2; and in the latter year was elected professor of Latin at Cornell. He has been a frequent contributor to classical journals and editor of classical texts. Publications: *A Latin Grammar* (1895); *The Foundations of Latin* (1898); *Critique of Some Recent Subjunctive Theories* (1898); *The Quantitative Reading of Latin Poetry* (1899); *The Teaching of Greek and Latin in Secondary Schools* (1900). He has edited: *Xenophon's Hellenica, Books V.–VIII.* (1892); *Tacitus, Dialogus de Oratoribus* (1894); *Cicero, De Senectute* (1897): and *Cicero, De Amicitia* (1897); etc.

BENNETT, Charles Wesley, American Methodist clergyman and educator: b. East Bethany, N. Y., 1828, July 18; d. 1891, April 17. He was principal of Genesee Wesleyan Seminary (1869–71); professor of history and logic at Syracuse University (1871–85); professor of historical theology, Garrett Biblical Institute, Evanston, Ill. (1885–91). He wrote *National Education in Italy, France, Germany, England, and Wales* (1878); and *Christian Art and Archæology of the First Six Centuries* (1888).

BENNETT, Edmund Hatch, American lawyer: b. Manchester, Vt., 1824, April 6; d. 1898, Jan. 2. He was graduated at the University of Vermont in 1843, and admitted to the bar in 1847. He practised for many years in Taunton, Mass., and was mayor of that city 1865–7, and judge of probate and insolvency of Bristol County 1858–83. He was lecturer at Harvard Law School 1865–71, and afterward professor and dean at the Law School of Boston University. His works include 30 volumes of *English Law and Equity Reports;* 9–12 *Cushing's* (*Mass*) *Reports*; *Massachusetts Digest* (3 vols.); *Bingham on Infancy; Blackwell on Tax Titles; Leading Criminal Cases* (2 vols.); *Goddard on Easements; Benjamin on Sales; Pomeroy's Constitutional Law; Indermaur's Principles of Common Law;* and *Fire Insurance Cases* (5 vols.). He also made frequent contributions to professional journals, and was co-editor of the *American Law Register.*

BENNETT, Emerson, American novelist: b. Monson, Mass., 1822, March 16; d. Philadelphia, Pa., 1905, May 12. He began to write at an early age and published some 60 or more extremely sensational tales which have been popular with uncritical readers. Among them are *Prairie Flower; The Outlaw's Daughter;* and *The Forged Will.*

BENNETT, James Gordon (1st): 1795, Sep. 1—1872, June 1; b. New Mill, near Keith, Scotland: journalist. His ancestry was French Roman Catholic, and at the age of 14 he went to Aberdeen, with the intention of studying for the priesthood. He soon found that this vocation would be unsatisfactory, and decided to emigrate to America, and in 1819, Apr., he arrived at Halifax, Nova Scotia, where he endeavored to earn his living by teaching bookkeeping. Not prospering in this he went to Boston, and for a time was engaged as a proof-reader. About 1822 he removed to New York, where he contributed to newspapers, but soon again removed to Charleston, S.C., and entered the office of the *Charleston Courier* as an assistant. In 1824, Mr. B. returned to New York, and tried various pursuits, at one time starting a commercial school and again lecturing on political economy, but all without success, and he turned again to newspaper work in a small way, writing paragraphs, poetry, and sketches, and taking assignments as a reporter when he could obtain them. In 1825, he purchased the *Sunday Courier* on credit, but after running it for a short time was obliged to give it up. The next year he formed a connection with the *National Advocate*, but this paper he left from a disagreement with its policy. He then became an associate editor of Major Noah's *Enquirer*, joined the Tammany association, and in 1828 was sent to Washington by the *Enquirer* as a special correspondent, writing chatty personal letters which became popular and were generally copied. The *Enquirer* was soon consolidated with another paper, and became the well known *Courier and Enquirer*, of which Gen. James Watson Webb was editor and Mr. B. assistant. Thus ably conducted, it soon took a leading position in the press, but when it changed its policy and deserted Andrew Jackson, Mr. B. retired from it, and for thirty days ran a cheap party organ, and later a similar paper called *The Pennsylvanian*, in Philadelphia. Finding that he was not being sustained by the party, he returned to New York, and, 1835, May 6, issued the first number of the *Herald*, arranging with two young printers, Anderson and Smith, to print it as partners. It was a little four-page sheet, sold for a cent a copy, and the only original writing it contained was furnished by Mr. B. himself, who filled it with striking or sensational news, and spicy personal intelligence, and particularly with a money article, then for the first time made a feature in American journalism. Two months after the paper started the printing-office was burned, and Mr. B.'s partners gave up the enterprise, leaving him to his fate, and on Aug. 31 he started afresh as sole proprietor. A thorough, detailed report of the great fire of 1835, Dec. 16, gave the *Herald* its first impetus towards the success which it soon attained. In 1838, Mr. B. began to organize his system of correspondence, engaging special persons in the principal American cities and in Europe. He was also the first to employ newsboys in distributing his paper.

In 1846 the first instance of extended newspaper telegraphing was given by the *Herald*, a long and important speech by Henry Clay being specially telegraphed to it from Washington. The circulation of the paper is said to have more than doubled during the Rebellion, its expenses, however, being increased enormously through the employment of its very large number of war correspondents, one or more of whom were occupied during the entire war at every military headquarters and accompanying every principal army movement.

BEN'NETT, James Gordon, Jr.: journalist: b. New York, 1841, May 10. He received a liberal education in Europe, becoming an accomplished linguist, but in early life showed little taste for a literary career. His disposition was bold and adventurous, and he early gave much attention to yachting, in which sport he distinguished himself (1866) by sailing his schooner-yacht *Henrietta* in the ocean race from Sandy Hook to the Needles, Isle of Wight, in 13 days, 21 hours, and 55 minutes, winning the race from two competing yachts whose owners did not choose to take the risk of personally sailing them. For several years he had been closely studying the details of the business mangement of his father's newspaper, and 1866 he succeeded Frederick Hudson as managing editor. From that time till his father's death (1872) he largely directed the course of the *Herald*, and he became sole proprietor of the paper by his father's will. He fitted out the *Jeannette* Polar expedition, sent Henry M. Stanley in search of Dr. David Livingstone, organized a system of storm prognostications in his paper, greatly valued by shipping masters on both sides of the Atlantic, was associated with John W. Mackay in laying the Commercial cable, founded the *Evening Telegram* in New York, and established daily editions of the *Herald* in Paris and London. He has travelled extensively over the world, resides chiefly in Paris, and directs the management and policy of his newspapers by telegraph.

BEN'NETT, John Hughes: 1812, Aug. 31—1875, Sep. 25; b. London: physician. He was educated in Exeter; began studying medicine 1829, graduated at the medical dept. of Edinburgh Univ. 1837; spent four years in post-graduate study in France and Germany; founded and was pres. of the Paris Medical Soc.; settled in Edinburgh 1841; and was prof. of the institutes of medicine in the Edinburgh Univ. 1848–74. He is best known as the first advocate of the use of cod-liver oil in all consumptive diseases, and as the first lecturer in Great Britain on histology and the use of the microscope. He conducted many original investigations, and contributed his conclusions freely to the medical journals.

BENNETT, Joseph M., American philanthropist: b. Juliustown, N. J., 1816, Aug. 16; d. 1898, Sept. 29. He engaged in the clothing business in Philadelphia, Pa., when 16 years old. In 1880 he gave 40 acres of ground

in what is now Fairmount Park, valued at $400,000, for a Methodist Orphanage, to the support of which he afterward largely contributed. He also established the Hays Home, and gave valuable properties to the Deaf and Dumb Institute, the University of Pennsylvania, and the Methodist Deaconesses. His property was said to be worth $3,000,000, and it is estimated that he gave $1,000,000 to charity. He bequeathed $500,000 to the University of Pennsylvania for its proposed college for women.

BENNETT, Mary E. (Elizabeth Glover), American writer: b. Connecticut, 1841; a writer of New Haven, Conn., whose writings have been published over the pen name Elizabeth Glover. They include *Cyril Rivers; Six Boys; Asaph's Ten Thousand; Talks About a Fine Art; Family Manners; The Children's Wing; Jefferson Wildrider; The Gentle Art of Pleasing.*

BENNETT, Samuel Crocker, American lawyer: b. Taunton, Mass., 1858, April 19. He is a son of Edmund Hatch Bennett (q.v.), and from 1898–1902 was dean of the law school of Boston University. He is one of the editors of *Federal Decisions; Smith's Leading Cases; Benjamin on Sales; Cyclopedia of Law and Procedure.*

BENNETT, Sanford Fillmore, American hymnologist: b. Eden, N. Y., 1836; d. 1898, June 12. He settled in Elkhorn, Wis., in 1860, and became editor of the *Independent.* Resigning this place, he entered the 40th Wisconsin Volunteers and served with them throughout the Civil War. In 1867 he aided J. P. Webster, the composer, in preparing *The Signet Ring,* a Sunday-school hymn-book, to which he contributed about 100 hymns. *The Sweet Bye and Bye* was one of the first of these. Many of Mr. Bennett's hymns and songs have been published in sheets.

BENNETT, William Cox, English song writer: b. Greenwich, 1820, Oct. 14; d. Blackheath, 1895, March 4. He suggested that the bust of Longfellow be placed in Westminster Abbey, and formed a committee of 500, with the Prince of Wales at its head, to effect it. He was the author of *Poems* (1850); *The Trial for Salamis* (1850); *Endowed Parish Schools and High Church Vicars* (1853); *Queen Eleanor's Vengeance, and Other Poems* (1856); *War Songs* (1857); *Songs by a Song-Writer* (1858); *Baby May, and Other Poems* (1859); *Our Glory Roll, and other National Poems* (1867); *Contributions to a Ballad History of England, etc.* (1869); *School-Book of Poetry* (1870); *Songs for Sailors* (1872); *Narrative Poems and Ballads* (1879); *Songs of a Song-Writer* (1876); and *Sea Songs* (1878).

BENNETT, *bĕn'nĕt,* Sir William Sterndale, mus. d., d.c.l.: 1816, Apr. 13—1875, Feb. 1: b. Sheffield: English pianist and composer. After studying under Crotch, Holmes, and Potter, in the Royal Acad., London, he attracted the notice of Mendelssohn at the Düsseldorf Musical Festival, appeared with success at Leipzig in the winter of 1837–8, and was received with great applause when he returned to London. In 1838, he was elected member of

the Royal Soc. of Music. In 1856, he succeeded Mr. Walmsley as prof. of music at Cambridge. At the opening of the International Exhibition, 1862, Tennyson's ode, *Uplift a Thousand Voices*, set to music by B., was fervidly sung. In 1868, he became principal of the Royal Acad. of Music; and was knighted 1871. He was too entirely dominated by Mendelssohn's influence to do great original work. He is best known by his overtures, *The Naiads* and *Parisina;* his cantatas, *The May Queen* and *Woman of Samaria;* and his little musical sketches, *Lake*, *Mill-stream*, and *Fountain.*

BEN NEVIS, *bĕn nĕv'ĭs:* highest mountain (4,406 ft.) in Great Britain, in Inverness, Scotland. It is difficult of ascent, with a precipice of 1,500 ft. on the n.e. side. Granite and gneiss form the base, which above is composed of porphyry. A meteorological observatory was erected on the summit in 1883.

BENNINGSEN, *ben'ĭng-sĕn*, Levin Aug. Theophilus, Count: 1745, Feb. 10—1826, Oct. 3; b. Brunswick: one of the most famous Russian generals. His father was an officer in the Brunswick Guards; and B. himself entered the Hanoverian service for a time; but having squandered the property left him, he joined the Russian army, 1773, and in the Turkish war soon attracted the notice of the empress Catherine, who employed him to carry out her designs against Poland. He was one of the leaders of the conspiracy against the emperor Paul (1801); though he is said not to have been present at the catastrophe, but to have prevented the empress Maria from rushing to her husband when she heard his cries. He fought with considerable success in the battle of Pultusk (1806), and held the chief command in the obstinate and murderous struggle at Eylau (1807). When Napoleon invaded Russia in 1812, B. commanded the Russian centre on the bloody field of Borodino, and gave his voice for fighting a second battle before the walls of Moscow. Before the French began their retreat, he gained a brilliant victory over Murat at Woronowa (Oct. 18). Differences with Kutusov, who would not adopt B.'s plan to prevent the French from crossing the Beresina, made him retire from the army; but after Kutusov's death, he took the command of the Russian army of reserve, which entered Saxony 1813, July, fought victoriously at the battle of Leipsic, and was created count by the emperor Alexander on the field. When Leipsic was taken, it was he that was commissioned by the allies to announce to the king of Saxony that he was a prisoner. Failing health made him retire from the Russian service, 1818, to his paternal estate in Hanover, where he died. His son, Alex. Levin B., became a leading Hanoverian statesman.

BENNINGSEN, Rudolf von: German statesman: 1824, July 10—1902, Aug. 7; b. Lüneburg, Hanover. He studied jurisprudence at Göttingen and Heidelberg

1842–45; entered the Hanoverian civil service 1846; became judge of the superior court at Göttingen 1854; but resigned 1856 to enter the Hanoverian chamber of deputies: there he became leader of the opposition. B. acted an important part in the founding of the German empire; was pres. of the German house of delegates 1873–79; and refused re-election to the house 1883 to devote himself to the interests of the national liberal party in Hanover.

BENNINGTON, *bĕn'nĭng-ton:* cap. of Bennington co., Vt., 55 m. s. by w. of Rutland, 35 m. n.e. of Albany, N. Y. It has churches, newspapers, graded schools, banks, foundries, knitting-mills, and manufactories of machinery, woolen goods, shirts, collars, needles, and lumber. It contains also large manufactories of fine parian-ware and porcelain from materials that abound in its vicinity. There is an observatory on Mount Anthony near by. The 'Battle of B.' was fought in 1777, Aug. 16, when Gen. Stark with the New Hampshire militia defeated a detachment of Burgoyne's army commanded by Col. Baum. Stark, pointing to the enemy, said to his soldiers that he would gain a victory over them, or Molly Stark should be a widow that night. The soldiers, fired by the same patriotic enthusiasm, adopted 'Molly Stark' as their watchword, and by their heroic valor made that one of the the glorious days of the Revolution. The English lost 200 killed, 600 prisoners, and 1,000 stand of arms. The Americans lost 14 killed, and 42 wounded (see STARK, JOHN).—A monument to commemorate this victory was erected at B. 1891. It stands on a commanding eminence, 283 ft. above the Walloomsac river. It is an obelisk of native stone, faced with dolorite. From base to top of capstone its height is 301 ft. 10½ in.; the base is 37 ft. 4 in. square. A lookout chamber 188 ft. above the foundation is reached by means of an iron staircase. The total cost of the momument was $100,000, of which sum congress contributed $40,000, Mass. $10,000, N. H. $7,500, Vt. $15,000 (and the site); the remainder by private subscription. Pop. (1910) 8,698.

BEN-NUT, and BEN-OIL: see under MORINGA.

BENSHIE, *ben'shē*, or BANSHEE, *băn'shē:* in the folk-lore of the Irish and western Highlanders of Scotland, a female fairy who makes herself known by wailings and shrieks, premonitory of a death in the family over which she exercises a kind of guardianship. This notion is woven into many folk-tales of rare pathos and beauty. A guardian spirit of the same kind occurs frequently in the folk-lore of Brittany. The name is supposed to be formed from the Irish Celtic *ben* or *bean*, a woman; and *sighe*, a fairy.

BENSON, *bĕn'sŭn*, EDWARD WHITE, D.D.: Anglican archbishop: 1829, July 14—1896, Oct. 11: b. near Birmingham, England. He was educated at King Edward's School, Birmingham, and in Trinity Coll., Cambridge; and graduated at his college 1852 as First Class in classical honors, and Senior Optime in the mathematical tripos. He was (1853–59) an asst. master at Rugby School, and was head-master

of Wellington Coll. 1859–72. On the restoration of the ancient see of Truro, B. was made its bp. 1877, and at once began the erection of a cathedral: the mere shell of the edifice cost $500,000, and most of the money was collected through his exertions. On the death of Abp. Tait, 1882, B. was appointed his successor in the archiepiscopal see of Canterbury. Among his published writings are vols. of *Sermons; The Cathedral, Its Necessary Place in the Life and Work of the Church; Christ and His Times.*

BENSON, Egbert, ll.d.: 1746, June 21—1833, Aug. 24; b. New York. He graduated 1776, at King's (now Columbia) College, studied law and rose in his profession, becoming first atty.-gen. of the state 1777. He was a member of the revolutionary committee of safety, a member of the first state legislature, and of the continental congress 1784–88. He was a judge of the supreme court of N. Y., 1794–1802, several times a member of congress, and first president of the N. Y. Hist. Society.

BENSON, Eugene: artist: 1837————; b. Hyde Park, N. Y. He was educated in New York, and became a pupil in the National Acad. of Design 1856, studying also in Paris, Venice, and Rome. He painted for a while in New York, in the same studio with W. J. Hennessy, but eventually settled in Rome, where he has remained, with occasional excursions into the East. Among his best-known paintings are *Strayed Maskers* (1873); *Interior of St. Mark's* (1876); *Bazaar at Cairo* (1877); *Fire Worshippers* (1879); *Mountain Torrent* (1881); *State Secret in Venice* (1882); and *Ariadne* (1883). B. has written several art works.

BENSON, Joseph: English Methodist clergyman: 1748, Jan. 25—1821, Feb. 16. After receiving a secular education, he studied theol. intending to enter the priesthood of the Church of England. He became interested in Methodism, however, and joined that sect, at the time when Wesley's earnestness and fervor had made it most powerful and popular. B. succeeded Wesley as pres. of the conference of the church, and became editor of the *Wesleyan Magazine.* He was author of *Life of John Fletcher* and *Commentary on the Holy Scriptures.*

BENT, n. *bĕnt* [see Bend]: curvature; the tension or strain of the mental powers; disposition towards something; inclination: Adj. curved; inclined; prone to; determined; in *bot.*, hanging down. Top of one's bent, to the very utmost that his inclination and bias would permit, as 'he was fooled to the *top of his bent.*' Bent on it, resolutely resolved upon it.—Syn. of 'bent, n.': bias; inclination; turn; propensity; tendency; proneness; prepossession.

BENT, v. *bĕnt:* pt. and pp. of Bend, which see.

BENT GRASS, or Bent, *bĕnt* [Ger. *binse,* reed or bent grass], (*Agrostis*): genus of grasses, distinguished by a loose panicle of small, one-flowered, laterally compressed spikelets; the glumes unequal, awnless, and longer than the paleæ, which are also unequal, and of which the inner

one is sometimes wanting, and the outer sometimes has and sometimes has not an awn; the seed free. For explanation of these terms, see GRASSES. The species are numerous, and are found in almost all countries and climates. All are grasses of a slender and delicate appearance. Some are very useful as pasture-grasses and for hay, on account of their adaptation to certain kinds of soil, although none of them is regarded as very nutritious.—The COMMON BENT GRASS (*A. vulgaris*) is known in this country as RED TOP (and in Penn., etc., as HERD'S GRASS), and is abundant in many parts of the continent of Europe and America. In the United States it is a valuable grass, both n. and s., not only flourishing in moist land, to which it is specially adapted, but also growing in thin and dry soils. If rather closely fed, it is a good grass for pastures; and in rich soils it yields a large quantity of hay which, if cut before the seed is ripe, is of very fair quality. It is one of our most permanent grasses.—The WHITE BENT GRASS (*A. alba*), in some localities known as WHITE-TOP, resembles the species just described, but is not considered as valuable. On very moist and rich soils it often yields large crops. There are several varieties, but in all of them the *ligule* (the little membranous tongue at the junction of the blade of the leaf with its sheathing base) is elongated and acute, while in *A. vulgaris* it is very short, and appears as if cut off. A variety so little different as scarcely to deserve the name, but with somewhat broader leaves and more luxuriant habit of growth, was at one time much celebrated among British farmers under the name FIORIN GRASS, or *Agrostis stolonifera*. It was unduly lauded, and the consequent disappointment led to its being unduly disparaged. It is a useful grass in moist grounds, newly reclaimed bogs, or land liable to inundation. The first three or four joints of the culms lie flat on the damp soil, emitting roots in abundance, and it was formerly propagated by chopping these into pieces, and scattering them, but now generally by seed. Other U. S. species are *A. elata*, swamps, s.; Thin Grass (*A. perennans*), damp shade; Hair Grass (*A. scabra*), dry places, common. Herd's Grass is a name used in Britain for '*A. dispar*' (?), but in this country applied to Timothy Grass, and s.to Red-top. '*A. dispar*' is

Bent Grass (*Agrostis vulgaris*).

said to be highly esteemed in France, particularly upon account of the great crop which it yields on deep sand, and on low, moist, calcareous soils.—BROWN BENT GRASS (*A. canina*) is native in N. America, and has alpine varieties; in Britain, it is abundant, and is valued for mixing with other grasses to form permanent pasture on poor wet peaty soils.—SILKY BENT GRASS (*A. Spica venti*) is a beautiful grass, with very slender branches to its ample panicle, which, as it waves in the wind, has a glossy and silky appearance. It is common in southern and central Europe; an annual grass, occasionally sown in spring to fill up blanks in grass-fields.

BENTY, a. abounding in bents; overgrown with bents; resembling bents.

BENTHAM, *ben'tam* or *běn'tham*, JEREMY: 1748, Feb. 15—1832, June; b. in Red Lion street, Houndsditch, London; eccentric but eminent writer on ethics and jurisprudence. He was son of a wealthy solicitor, and received his early education at Westminster School; and when little more than twelve years of age, he went to Queen's College, Oxford, where he took his Master's degree, 1766. Before entering the univ. he had, by his precocious tendencies to speculation, acquired the title of 'philosopher.' On graduating, his father, who expected his son to become lord chancellor, set him to the study of law at Lincoln's Inn, where he was called to the bar, 1772. He never practiced in his profession, however, for which he had a strong distaste, which is paraded in many of his writings. Turning from the practice of law to its theory, he became the greatest critic of legislation and government in his day. His first publication, *A Fragment on Government*, 1776, was an acutely hypercritical examination of a passage in Blackstone's *Commentaries*, prompted, as he has himself explained, by 'a passion for improvement in those shapes in which the lot of mankind is meliorated by it.' The *Fragment* abounds in fine, original, and just observation; it contains the germs of most of his after-writings, and must be highly esteemed, if we look away from its disproportion to its subject and the writer's disregard of method. The *Fragment* procured him the acquaintance of Lord Lansdowne, in whose society at Bowood he afterwards passed perhaps the most agreeable hours of his life. It was in the Bowood society that he conceived an attachment to Miss Caroline Fox (Lord Holland's sister), who was still a young lady, when B., in the 54th year of his age, offered her his heart and hand, and was rejected 'with all respect.' In 1778, he published a pamphlet on *The Hard Labor Bill*, recommending an improvement in the mode of criminal punishment; which he followed in 1811 by *A Theory of Punishments and Rewards*. In these two works B. did more than any other writer of his time to rationalize the theory of punishments by consideration of their various kinds and effects, their true objects, and the conditions of their efficiency. He published in 1787 *Letters on Usury;* 1789, *Introduction to the Principles of Morals and Legislation;* 1802, *Discourses on Civil and Penal Legislation;* 1813, *A*

Treatise on Judicial Evidence; 1817, *Paper Relative to Codification and Public Instruction;* 1824, *The Book of Fallacies.* These were followed by other works of less consequence. All his productions have been collected and edited by Dr. Bowring and Mr. John Hill Burton, and published in 11 vols. It is well, however, for B.'s reputation that it does not rest wholly on his collected works; and that he found in M. Dumont, Mr. James Mill, and Sir Samuel Romilly, generous disciples to diffuse his principles and promote his fame. In his early works his style was clear, free, spirited, often eloquent; but in his later works it became repulsive, through being overloaded and darkened with technical terms. It is in regard to these more especially that M. Dumont has most materially served his master by arranging and translating them into French, through the medium of which language B.'s doctrines were propagated throughout Europe, till they became more popular abroad than in his own land. Mr. James Mill, himself an independent thinker, did much in his writings to extend the application in new directions of B.'s principles, a work in which, apart from his original efforts, he has achieved a lasting monument of his own subtilty and vigor of mind. The most valuable contribution in English to his reputation is unquestionably *Benthamiana,* by Mr. John Hill Burton, advocate, containing a memoir, selections of all the leading and important passages from his various writings, and an appendix embracing an essay on his system; and a brief, clear view of all his leading doctrines. Zanobelli has translated Bentham's *Theory of Legal Evidence* into Italian (Bergamo 1824, 2 vols.)

In all B.'s ethical and political writings, the doctrine of utility is the leading and pervading principle; and his favorite vehicle for its expression is the phrase, 'the greatest happiness of the greatest number,' which was first coined by Priestley, though its prominence in politics has been owing to Bentham. 'In this phrase,' he says, 'I saw delineated for the first time a plain as well as a true standard for whatever is right or wrong, useful, useless, or mischievous, in human conduct, whether in the field of morals or politics.' It is noticeable that the phrase affords no guidance as to how the benevolent end pointed at is to be attained; and is no more than a quasi-concrete expression of the objects of true benevolence. In considering how to compass these objects, B. arrived at various conclusions, which he advocated irrespective of the conditions of society in his day, and of the laws of social growth which, indeed, neither he nor his contemporaries understood. He demanded nothing less than the immediate remodeling of the government, and the codification and reconstruction of the laws; and insisted, among other changes, on those which came at a later day to be popularly demanded as the points of the 'Charter'—viz., universal suffrage, annual parliaments, vote by ballot, and paid representatives. However impossible some of these schemes were, it can-

not be denied that B. did more to rouse the spirit of modern reform and improvement in laws and politics than any other writer of his day. Many of his schemes have been, and many more are, in the course of being slowly realized; the end and object of them all was the general welfare, and his chief error—apart from his over-estimate of the value of some changes which he proposed—lay in conceiving that organic changes are possible through any other process than that of growth and modification of the popular wants and sentiments. It was this error that led the philosopher, in his closet in London, to devise codes of laws for Russia (through which country he made a tour, 1785) and America, the adoption of which would have been equivalent to revolutions in these countries, and then bitterly to bewail the folly of mankind when his schemes were rejected.

In ethics, as in politics, he pressed his doctrines to extremes. It has been said that his doctrine of utility was so extended that it would have been practically dangerous, but for the incapacity of the bulk of mankind for acting on a speculative theory.

By the death of his father, 1792, B. succeeded to property in London, and to farms in Essex, yielding from £500 to £600 a year. He lived frugally, but with elegance, in one of his London houses (Queen's Square, Westminster); and, employing young men as secretaries, corresponded and wrote daily. By a life of temperance and industry, with great self-complacency, in the societyof a few devoted friends (who, says Sir James Mackintosh, more resembled the hearers of an Athenian philosopher than the proselytes of a modern writer), B. attained to the age of eighty-four.—See UTILITARIANISM.

BENTHAMIA, *bĕn-thăm'ĭ-a*: genus of plants of the nat. ord. *Cornaceæ* (q.v.), consisting of Asiatic trees or shrubs, of which the fruit is formed of many small drupes grown together. *B. frugifera*, a native of Nepaul, is a small tree, with lanceolate leaves, and a reddish fruit, not unlike a mulberry, but larger; not unpleasant to the taste. The flowers are fragrant.

BENTINCK, *bĕn'tĭnk*, Lord WILLIAM GEORGE FREDERICK CAVENDISH, commonly called Lord George B.: 1802, Feb. 27—1848, Sept. 21; third son of the fourth Duke of Portland; at one time leader of the agricultural protection party. He entered the army when young and attained the rank of major. He subsequently became private sec. to his uncle, the Right Hon. George Canning. Elected in 1826 M.P. for Lynn-Regis, he sat for that borough till his death. At first, attached to no party, he voted for Rom. Cath. emancipation and for the principle of the Reform Bill, but against several of its most important details, and in favor of the celebrated Chandos Clause (q. v.). On the formation of Sir Robert Peel's ministry, 1834, Dec., he and his friend Lord Stanley, afterwards Earl of Derby, with some adherents, formed a separate section in the house of commons. On the resignation of Sir Robert

Peel in April following, Lord George openly joined the great conservative party, which acknowledged that statesman at its head, and adhered to it for nearly eleven years. When Peel introduced his free trade measures, 1845, a large portion of his supporters joined the protection party then formed, of which Lord George became the head, and a leading speaker in the debates. His speeches in the session of 1845–6 were most damaging to the government of Sir Robert Peel, and contributed in no small degree to hasten its downfall in July of the latter year. Lord George supported the bill for the removal of the Jewish disabilities, and recommended the payment of the Rom. Cath. clergy by the landowners of Ireland. In the sporting world he is understood to have realized very considerable gains, and he showed the utmost zeal at all times to suppress the dishonest practices of the turf. He died suddenly, at Welbeck Abbey, Nottinghamshire. A Life by Benjamin Disraeli appeared 1851.

BENTINCK, Lord William Henry Cavendish: 1774, Sept. 14—1839, June 17; second son of the third Duke of Portland, and uncle of Lord William George Frederick Cavendish B: a general officer and statesman. He became an ensign in the Coldstream Guards, 1791. Having served with distinction in Flanders, Italy, and Egypt, he was, 1803, appointed gov. of Madras, where he advocated several useful reforms; but his proscription of beards and the wearing of turbans and earrings by the sepoys when on duty led to the mutiny and massacre of Vellore, and his own immediate recall After serving with the army in Portugal and Spain, he was sent as British minister to the court of Sicily and commander-in-chief of the British forces in that island. At the head of an expedition, he landed in Catalonia, 1813, July, penetrated to Valencia, and afterwards laid siege to Tarragona, but was repulsed at Villa Franca. Between 1796 and 1826, he held a seat in parliament as member for Camelford, Nottinghamshire, and Ashburton. In 1827, he was appointed gov.-gen. of India, and sworn a privy-councilor. His policy in India was pacific and popular, and his viceroyship was marked by the abolition of Sutti (q.v.), and by the opening of the internal communication, as well as the establishment of the overland route. After his return, 1835, he was elected M.P. for Glasgow. He died at Paris.

BENTLEY, *bĕnt'lĭ*, Richard: 1662, Jan. 27—1742; b. Oulton, Yorkshire: distinguished classical scholar. In 1676, he entered St. John's College, Cambridge, in the humble capacity of subsizar. Little is known of his univ. career. On leaving the univ., he was appointed head-master of the grammar-school of Spalding, Lincolnshire. About a year afterwards, he resigned this situation to become tutor to the son of Dr. Stillingfleet, then Dean of St. Paul's, and subsequently Bp. of Worcester. B accompanied his pupil to Oxford, where he had full scope for the cultivation of classical studies; and was twice appointed to deliver the Boyle Lectures on the Evidences of Natural and Revealed Religion.

He took orders in the church, and owed to the patronage of the Bp. of Worcester various good ecclesiastical appointments, and through the same influence became librarian of the King's Library at St. James's. In 1690, he published his *Dissertation upon the Epistles of Phalaris*, which established his reputation throughout Europe, and may be said to have begun a new era in scholarship. The principles of historical criticism were then unknown, and their first application to establish that the so-called Epistles of Phalaris, which professed to have been written B.C. 6th c., were the forgery of a period some eight centuries later, filled the learned world with astonishment.

In 1700, B. was appointed Master of Trinity College, Cambridge; and in the following year, he married Mrs. Joanna Bernard, the daughter of a Huntingdonshire knight. The history of B.'s mastership of Trinity is the narrative of an unbroken series of quarrels and litigations, provoked by his arrogance and rapacity, for which he was fully as well known during his lifetime as for his learning. He contrived, nevertheless, to get himself appointed regius prof. of divinity, and, by his boldness and perseverance, managed to pass scathless through all his controversies. Notwithstanding that at one time the Bp. of Ely, the visitor of Trinity, pronounced sentence depriving him of his mastership, and that at another the senate of the univ. pronounced a similar sentence of his academic honors, he remained in full possession of both the former and the latter till his death. This stormy life did not impair his literary activity. He edited various classics—among others, the works of Horace—upon which he bestowed vast labor. He is, however, more celebrated for what he proposed than for what he performed. The proposal to print an edition of the Greek New Test. in which the received text should be corrected by a careful comparison with all the existing MSS., was then singularly bold, and evoked violent opposition. He failed in carrying out his proposal: but the principles of criticism which he maintained have since been triumphantly established, and have led to important results in other hands. He is to be regarded as the founder of that school of classical criticism of which Porson afterwards exhibited the chief excellences, as well as the chief defects; and which, though it was itself prevented by too strict attention to minute verbal detail from ever achieving much, yet diligently collected many of the facts which men of wider views are now grouping together, to form the modern science of comparative philology. B. at his death left one son, Richard, who inherited much of his father's taste with none of his energy; and several daughters, one of whom, Joanna, was the mother of Richard Cumberland the dramatist.—Monk's *Life of B.* (1830); Jebb's *Bentley* (1882).

BENTON, Thomas Hart; 1782, Mar. 14—1858, Apr. 10, b. near Hillsborough, Orange co., N. C.: son of Col. Jesse B., a lawyer, who was private sec. to Gov. Tryon, the last of the royal governors of North Carolina. His mother was a Virginian, of the Gooch family, and the

wife of Henry Clay was his own cousin. While a boy of eight years of age his father died, leaving a large family of young children, of whom Thomas was the eldest. His mother was without much means, and the opportunities for the education of her children were but slight. Thomas studied for a while at a grammar school and also at the Univ. of North Carolina, but without graduating. He left college to go with his mother to Tennessee, where the family settled on a large tract of land, property left by Col. Jesse Benton, 25 m. s. of Nashville. Here the whole family gave their efforts to opening a farm of 3,000 acres; and the settlement, then on the extreme frontier, gradually filled up and was called Bentontown, a name which it still retains.

B. found time to study law, and was admitted to the bar in Nashville, 1811, having for his friend and patron Andrew Jackson, at that time judge of the supreme court of Tennessee. During the war with England, 1812, Mr. B. was one of Gen. Jackson's aides-de-camp and they were warm friends, but a quarrel between his brother, Jesse Benton, and William (afterwards Gen.) Carroll, drew into it both Col. Benton and Gen. Jackson, and, 1813, Sept. 4, a street fight occurred in Nashville, in which Jackson was shot in the left shoulder, and Jesse Benton severely stabbed, while Col. Benton was struck by Jackson with a horse-whip.

In the same year, Col. Benton was appointed lieut. col. in the U. S. army, but held his commission only a short time, peace being declared between England and America. In 1815, he established himself in St. Louis, where he founded the *Missouri Inquirer,* the management of which brought him into conflict with a number of people, and he fought several duels, in one of which he killed his opponent, a Mr. Lucas. His paper made a strong fight for the admission of Missouri as a state, and on that event occurring he was made one of the new senators. From this time forward he was regularly re-elected to the U. S. senate, of which he remained a member 30 years. During this long period Col. B. was active in debate and committee work on all the important questions which occupied the minds of the people and of their representatives and senators, and became recognized as one of the foremost statesman in the country. A man of towering presence, powerful will, broad and vigorous intellect, a thorough student, and posssssed of a remarkable memory, he was one of the ablest leaders in the councils of the nation. During the early years of his service as senator he gave much of his time and influence to the advocacy of such land laws as should facilitate the great pioneer movement which was then going on in the west and southwest. During the two administrations of Gen. Jackson, Col. B. was one of his staunchest supporters, and his influence both with the democratic party and with the pres. was felt in its relation to every grave and important public question. Among the subjects to which he devoted himself with the greatest assiduity and earnestness, the proposal of an amendment

to the constitution providing for a direct vote for president by the people was one of the most important. He strove for this with great determination during several sessions, but being opposed by the machine politicians of the day he was unsuccessful. Col. B. opposed the rechartering of the U. S. bank after its original charter had expired, being a strong advocate of a gold and silver currency, and it was this advocacy which gained for him the soubiquet of 'Old Bullion.' His insight into the possible future of his country, then growing into prosperity and power, was extraordinary, and influenced largely his legislative action. He was one of the prime movers of the Pacific railroad enterprise, and recommended and facilitated the various means for exploration in the far west and for overland traffic. He favored the opening of New Mexico to American trade, and the establishment of military stations on the Missouri and throughout the interior. He recommended and fostered amicable relations with the Indian tribes, and our lake commerce. He was also one of the pioneers in establishing and organizing our post-office system upon the broadest possible basis. The great questions of the Oregon boundary and the annexation of Texas occupied Col. B.'s attention, and during the Mexican war his knowledge of the Spanish provinces made him a most useful assistant to the government. So important were his services and so valuable was his knowledge of the country that it was contemplated by Pres. Polk to offer him the title of lieut.gen. and to place him in command during the war. The exciting compromise acts of 1850 were opposed by Col. B., an opposition which brought him into direct conflict with Mr. Clay, and during the celebrated nullification fight with South Carolina he was the most powerful democratic opponent of John C. Calhoun, the struggle leading to an animosity between these two which lasted during their lives. Col. B. also opposed Mr. Calhoun on the 'Wilmot Proviso' question. He not only fought this question out in the senate, but on the adjournment of congress in 1849 took the stump in Missouri and canvassed the whole state, his speeches becoming famous for their bitterness and sarcasm, as well as the earnestness and force of the arguments on his side of the question, which was the exclusion of slavery from all territory to be subsequently acquired, thus putting himself on record in opposition to the doctrine of state rights. Col. B. retired from the senate after six consecutive sessions, and remained for two years in private life, when in 1852 he announced himself as a candidate for congress and was elected. During his term he supported the administration of Franklin Pierce, and opposed particularly the Kansas-Nebraska bill, which, however, he failed to defeat. Not being returned to congress at the next election he retired from politics for two years, and in 1856 was a candidate for governor of his state, but was defeated. In the presidential election of that year, although his son-in-law, Col. Fremont, was a candidate, Col. B. supported Mr. Buchanan in opposition to him, on the ground that the

THOMAS H. BENTON.

election of Fremont would further sectionalism in party warfare.

Col. B., while senator, married Elizabeth, dau. of Col. James McDowell, of Virginia; she experienced a stroke of paralysis 1844, which physically disabled her, and she died 1854, leaving four daughters, the second of whom, Jessie, married Gen. John C. Fremont.

Col. B. devoted the last years of his life to writing his *Thirty Years' View*, and to an *Abridgment of the Debates in Congress from* 1789 *to* 1856, 15 vols. He was noticeable among other things for total abstinence from tobacco and liquor, also from gambling, giving as his reason that his mother had wished it, and he had determined to adhere to her wishes as long as he lived. After his death a fine bronze statue of him was erected in the public park of St. Louis.

BENTONVILLE, Johnston co., N. C., where, 1865, March 19, the left wing of Gen. Sherman's army, under command of Gen. Slocum moving northward for Goldsborough was attacked by about 16,000 Confederates under Gen. J. E. Johnston, in which the Confederates were repulsed after some fighting, which ended at dark. Slocum was reenforced on the 20th from the right wing, and the fighting was renewed that day and the next, and on the night of the 21st Johnston retreated toward Raleigh, and Slocum continued his march to Goldsborough. The Union loss in killed, wounded and missing was about 1,100; the Confederate loss 2,118. This engagement is noted as the last battle of Sherman's army, and one of its most important.

BENUÉ, *ben-ô-e'*, or BINUÉ, *bĭn-ô-ă'*, or, as Dr. Barth prefers to spell it, BE'NUWÉ, called also Chadda and Tchadda, from the erroneous supposition that it was connected with Lake Tchad: important river of central Africa, forming the e. branch of the Quorra or Niger, which it joins about 230 m. above the mouth of that river in the Gulf of Guinea. At its junction with the Faro, lat. about 9° 33′ n., long. 12° 40′ e., the B. is 800 yards across, with a general depth in its channel of 11 ft., and 'a liability to rise under ordinary circumstances at least 30 ft., or even at times 50 ft. higher.' Dr. Barth, who came upon the river in 1851, while traveling in Adamawa, near the confluence of the Faro, which joins it on its left bank about lat. 12° 30′ e., was told that it came from the southeast a distance of nine days' journey. In 1854, an expedition under the command of Dr. Baikie explored the B. as far as Dulti, a place about 350 m. above its confluence with the Niger, and some 80 or 100 m. from where Dr. Barth crossed. The result was to show that a large, fertile, and populous tract of a region of Africa previously in a great measure unknown was accessible by means of a navigable river. In a second expedition, undertaken 1862, Dr. Baikie explored as far n. as Kano, in Haussa. The expedition of the Church Missionary Soc., 1879.

explored several unvisited portions, and in 1883 Flegel reached its sources.

BENUMB, v. *bĕ-nŭm'* [AS. *benæman;* Ger. *benehmen,* to take away, to stupefy]: to deprive of feeling; to make torpid; to stupefy. BENUMB'ING, imp. BENUMBED, pp. *bĕ-nŭmd'.* BENUMB'NESS, n. the state or condition of being benumbed.

BENYOWSKY, *bā-ne-ŏv'skē,* MAURICE AUGUSTUS, Count DE: 1741–86, May 23; b. Verbowa, Hungary. He served in the Seven Years' War, studied navigation, and then fought for the Polish Confederation, until he was taken prisoner, 1769. He was banished to Siberia, and thence to Kamtchatka. He was made tutor in the family of the governor. Escaping after a struggle in which the governor was killed, B. sailed from Kamtchatka, 1771, and visited Japan, Macao, and France. He was sent to found a French colony in Madagascar, 1774, where some chiefs made him king, and was killed in a conflict with the French govt. of the Isle of France.—See *Memoirs and Travels of B., written by Himself* (1790).

BENZERTA, *bĕn-zĕr'tă,* LAKES OF: the ancient *Hipponitis Palus* and *Sisaræ Palus,* two lakes within the dominions of Tunis, near the town of Bizerta (q.v.) or Benzerta, 30 m. n.w. of the city of Tunis. They are each about 9½ m. long, and the larger one, which is clear and salt, is about 5½ m. broad; the smaller, which is turbid and fresh, 3½. A channel connects them.

BENZENE, *bĕn'zēn,* or BENZOL, *bĕn-zōl:* compound of carbon and hydrogen (C_6H_6) discovered by Faraday; found among the products of the destructive distillation of a great many organic bodies. See BENZINE. The most abundant source of B. is coal tar (see GAS: COAL). On distilling coal tar, the more volatile liquid hydrocarbons pass over first mixed with acid and basic compounds, and constitute what is known as light oil or coal naphtha. When the crude naphtha is purified by redistillation and subsequent agitation, first with sulphuric acid, and then with caustic soda, an oil is obtained which consists mainly of B. and its homologues. By submitting this oil to a process of fractional distillation, a portion is obtained, boiling at 176°—212°, from which B. crystallizes out on cooling the liquid to 32°. The B. is freed by pressure from the substances remaining liquid at this temperature. Commercial B. is always impure. Pure B. is most readily obtained by cautiously distilling a mixture of one part benzoic acid with three parts of slaked lime. The mixture of B. and water which passes over is shaken up with a little potash, the B. decanted, treated with fused calcium chloride to take up the water, and the dried B. thus obtained is rectified on the water-bath. At ordinary temperatures, B. is a thin, limpid, colorless liquid, evolving a characteristic and pleasant odor. At 32° F., it crystallizes in beautiful fern-like forms, which liquefy at 40°; and at 177°, it boils, evolving a gas which is very inflam-

mable, burning with a smoky flame. It readily dissolves in alcohol, ether, turpentine, and wood-spirit, but is insoluble in water. It is valuable to the chemist from the great power it possesses of dissolving caoutchouc, guttapercha, wax, camphor, and fatty substances. Impure B. is thus much used in removing grease-stains from woolen or silken articles of clothing. When heated, B. also dissolves sulphur, phosphorus, and iodine. B., when acted upon by chlorine, nitric acid, etc., gives rise to a very numerous class of compounds belonging to what is known as the aromatic series. The so-called coal-tar colors are all derivatives of B. and the homologous hydrocarbons. See DYE-STUFFS.

BENZINE, *bēn'zĭn* or *bĕn-zēn':* mixture of volatile hydrocarbons: therein different from *Benzene;* used as solvent of fats, resins, etc.; got by fractional distillation of petroleum; improperly written *Benzene.*

BENZOATE, n. *bĕn'zō-āt* [said to be from Ar. *benzoah;* Sp. *benjui,* benzoin]: a salt of benzoic acid. BENZOIN, n. *bĕn'zoyn,* C_6H_5 $COCH(OH)C_6H_5$, a compound obtained from oil of bitter almonds in brilliant prismatic crystals which are inodorous and tasteless—called also by a vulgar corruption *benjamin:* a fragrant resin obtained from a large tree of Sumatra, the *styrax benzoin.* BENZOIC, a. *bĕn-zō'ĭk,* applied to a fragrant acid obtained from the gum *benzoin,* commonly called *benjamin flowers,* and *flowers of benzoin.* BENZONITRIL, n. *bĕn'zō-nĭt'rĭl* [*benzoin,* and *nitrile*]: C_6H_5 CN, a liquid having the odor of the volatile oil of bitter almonds, obtained by digesting hippuric acid with sand and chloride of zinc. BENZENE, n. *bĕn'zēn,* or BENZINE, *-zĭn,* or BENZOL, *bĕn'zōl,* a clear, colorless, inflammable liquid, of a disagreeable odor, prepared in immense quantities from coal tar for the manufacture of aniline, and to be used as a solvent for wax, caoutchouc, etc.—as a commercial product it is always impure; when pure, it is known as *benzene,* and is a thin, limpid, colorless liquid, with a peculiar, ethereal odor—known also as one of the aromatic hydrocarbons. BENZYL, n. *bĕn'zĭl,* or BENZOYL, n. *bĕn'zoyl* [*benzoin;* and Gr. *(h)ule,* the substance from which anything is made]: an assumed compound forming the radical of oil of bitter almonds, benzoic acid, etc.—that is the benzoic series of ethers. BENZOLIN, n. *bĕn'zŏ-lin,* same sense as *benzol.*

BENZOIC ACID, *bĕn-zō'ĭk,* or THE FLOWERS OF BENZOIN: known since the beginning of the 17th c.; occurs naturally in many balsamiferous plants, especially in Benzoin Gum (q.v.), from which it may be readily obtained by several processes. The simplest is as follows: The coarsely powdered resin is gently heated in a shallow iron pot, the mouth of which is closed by a diaphragm of coarse filter-paper. Over this is tied a covering of thick paper somewhat like a hat. The porous filter-paper allows the vapors of benzoic acid to pass through it, but keeps back the empyreumatic products. At the end of the

operation, the hat-like cover is found lined with a crystalline sublimate of benzoic acid, nearly pure, mixed only with traces of a volatile oil, which gives it a pleasant smell, like vanilla. The benzoic acid thus prepared is the best for pharmaceutical purposes. Benzoic acid is also prepared from the urine of graminivorous animals, as the horse or cow. The urine is allowed to putrefy, then mixed with milk of lime and filtered. The filtrate, concentrated by evaporation, gives with hydrochloric acid a precipitate of benzoic acid. Benzoic acid thus prepared is cheaper, but always smells of urine. By subliming it with a small quantity of benzoin gum, the pleasant vanilla-like smell may, however, be imparted to it also. Benzoic acid is always in the form of snow-white, glistening, feathery crystals, with a fairy aspect of lightness, having a hot, bitter taste. It is readily dissolved by alcohol and ether, but sparingly soluble in water. Benzoic acid is one of the materials present in *Tincture Opii Camphorata*, the well-known paregoric, and has been administered in chronic bronchial affections; but the benefit derivable from its use in such cases is questionable. Benzoic acid taken into the stomach increases within three or four hours the quantity of hippuric acid in the urine. It forms a numerous class of compounds with the oxides of the metals, lime, etc., called benzoates. The chemical formula for crystallized benzoic acid is C_6H_5 COOH. Oil of bitter almonds (hydride of benzoyl) is the aldehyde of benzoic acid (see ALDEHYDES), and the corresponding alcohol, benzoic or benzylic alcohol, is also known.

BENZO'IC AL'DEHYDE, or BENZALDEHYDE, a colorless, volatile oil, familiarly known as 'oil of bitter almonds.' Benzaldehyde does no occur in the bitter almond in nature, but is formed, when the kernels are crushed and allowed to stand in water, by the decomposition of a glucoside known as 'amygdalin.' It has the chemical formula C_6H_5 CO.H, boils at 354° F., and has a specific gravity of about 1.05, and a refractive index of 1.56. Benzaldehyde is prepared, artificially, by boiling benzyl chlorid with nitrate of lead, copper, or sodium, and subsequent treatment with sodium acid sulphite, with which the benzaldehyde forms a crystalline compound that may be easily separated from the mother liquor by filtration or otherwise.

BENZOIN, *ben'zoyn*, or BEN'JAMIN, or BENZO'IC GUM: a fragrant resinous substance, formed by the drying of the milky juice of the Benzoin or Benjamin Tree (*Styrax*, or *Lithocarpus Benzoin*), a tree of the nat. ord. *Styracaceæ*, and a congener of that which produces STORAX (q.v.), a native of Siam, and of Sumatra and other islands of the Indian Archipelago. The tree grows to nearly two ft. in diameter; the smaller branches are covered with a whitish rusty down; the leaves are oblong, acuminate, and entire, downy and white beneath; the flowers are in compound racemes. B. is exported in reddish-yellow trans-

parent pieces. Different varieties, said to depend upon the age of the trees, are of very different price; the whitest, said to be the produce of the youngest trees, being the best. There is a variety known in commerce as *Amygdaloidal Benzoin*, which contains whitish almond-like tears diffused through its substance, and is said to be the produce of the younger trees. B. is obtained by making longitudinal or oblique incisions in the stem of the tree; the liquid which exudes soon hardens by exposure to the sun and air. B. contains about 10–14 per cent. of Benzoic Acid (q.v.); the remainder of it is resin. B. is used in perfumery, in pastilles, etc., being very fragrant and aromatic, and yielding a pleasant odor when burned. It is therefore much used as incense in the Greek and Rom. Cath. churches. Its tincture is prepared by macerating B. in rectified spirits for seven to fourteen days, and subsequent straining, when the *Compound Tincture of Benjamin, Wound Balsam, Friar's Balsam, Balsam for Cuts*, the *Commander's Balsam* or *Jesuit's Drops*, is obtained. B. is a good antiseptic, and it is to its germicidal properties that it owes its reputation. Previous to the antiseptic era in surgery, it was the custom to saturate the dressings with the tincture of B., the good results following its use being attributed to some mysterious power in it of promoting healing. It is now known that any good effect derived from its use is due to antiseptic action. In the preparation of *Court-plaster*, sarcenet (generally colored black) is brushed over with a solution of isinglass, then a coating of the alcoholic solution of benzoin. The tincture is likewise employed in making up a cosmetic styled *Virgin's Milk*, in the proportion of two drachms of the tincture to one pint of rose-water; and otherwise it is used in the preparation of soaps and washes, to the latter of which it imparts a milk-white color, and a smell resembling that of vanilla. B. possesses stimulant properties, and is sometimes used as medicine, particularly in chronic pulmonary affections. It may be partaken of most pleasantly when beaten up with mucilage and sugar or yolk of egg. The name *Asa dulcis* (q.v.) has sometimes been given to it, although it is not the substance to which that name seems properly to have belonged. The milky juice of *Terminalia Benzoin*, a tree of the natural order *Combretaceæ*, becomes, on drying, a fragrant resinous substance resembling B., used as incense in the churches of the Mauritius. It was formerly erroneously supposed that B. was the produce of *Benzoin odoriferum*, formerly *Laurus Benzoin*, a deciduous shrub, of the nat. ord. *Lauraceæ*, native of Virginia, about 10–12 ft. high, with large, somewhat wedge-shaped, entire leaves, which still bears in America the name of *Benzoin*, or *Benjamin Tree*, and is also called *Spice-wood* or *Fever-bush*. It has a highly aromatic bark, which is stimulant and tonic, and is much used in North America in intermittent fevers. The berries also are aromatic and stimulant, and are said to have been used in the United States during the war with Britain as a

substitute for pimento or allspice. An infusion of the twigs acts as a vermifuge.

BENZOL: see BENZENE.

BENZONI, GIROLAMO, *bĕn-zō'nē, jē-rō-lâ-mō*, Italian traveler: b. Milan, 1519; d. after 1566. He went to Spanish-America in 1542, visited the principal places then known, and frequently joined the Spaniards in raids on Indian settlements; and after returning to Italy (1556) published a narrative of his adventures, *History of the New World* (Venice 1565).

BENZOYL, *bĕn'zoyl:* the hypothetical radical C_7H_5O, supposed to exist in benzoic acid and many allied bodies. Thus, benzoic acid is regarded as the hydrate of benzoyl, and the oil of bitter almonds as the hydride of benzoyl, $C_7 H_5OH$. As further examples of this group of bodies, we may mention benzoyl chlorid, C_7H_5OCl, and benzoyl cyanide, C_7H_5OCN.—HYDRIDE OF BENZOYL is the volatile or essential oil belonging to the benzoic series. It is represented by the formula C_7H_5OH: see ALMONDS, VOLATILE OIL or ESSENTIAL OIL OF.

BEN'ZYL, the monovalent organic radical $C_6H_5 CH_2$ which does not exist in the free state, but which has numerous important compounds. Toluene (q.v.) is its hydrid. Benzylamine, $C_6H_5 CH_2NH_2$, is derived by substituting benzyl for one of the hydrogen atoms in ammonia, by heating benzyl chlorid with alcoholic ammonia. Benzyl chlorid, which is used as a source of 'oil of bitter almonds' ('benzaldehyde') and of benzoic acid, has the formula $C_6H_5 CH_2Cl$, and is obtained by passing chlorine into cold toluene, in direct sunlight. Benzyl alcohol, $C_6H_5 CH_2(OH)$, is the hydrate of benzyl, and is obtained by the action of an alcoholic solution of potash upon benzaldehyde.

BEOTHUK, *bā'ō-thŭk*, a linguistic stock of North American Indians, habitants of the region of the Exploits River in northern Newfoundland, and believed to have been limited to a single tribe, the last known survivor of which died in 1829. The Beothuks painted their bodies and their property with red ochre, and from this circumstance their stock and tribal name was derived. They were also known as the Goodnight Indians, from the incorrect translation of a Micmac word that sounded like Beothuk. It is not known whether the Beothuks became extinct by reason of wars and famine or by absorption among other tribes.

BEÖTHY, *bā'ō-tĭ*, ZOLTAN, Hungarian novelist and writer on æsthetics: b. Komorn, 1848, Sept. 4. Since 1882 he has been professor of æsthetics in the University of Budapest. His novels show great power in analysis of character and in realistic treatment. They include: *Besselyek* (1871); *A névtelenerk;* Kálózdi Béla (1875); *Rajzok* (sketches, 1879). A collection of his critical and dramatic essays appeared in Budapest in 1882. He is also author of a history of Hungarian literature, an important work upon tragedy (*A tragikum* 1885), and a history of Hungarian prose fiction (1886).

BEOWULF, *bā′ō-wûlf*, an Anglo-Saxon epic, the only manuscript of which belongs to the 8th or 9th century, and is in the Cottonian Library (British Museum). From internal evidence it is concluded that the poem in its essentials existed prior to the Anglo-Saxon colonization of Britain, and that it must be regarded either as brought to Britain by the Teutonic invaders, or as an early Anglo-Saxon translation of a Danish legend. From the allusions in it to Christianity, however, it must have received considerable modifications from its original form. It recounts the adventures of the hero Beowulf, especially his delivery of the Danish kingdom from the monster Grendel and his equally formidable mother, and, lastly, the slaughter by Beowulf of a fiery dragon, and his death from wounds received in the conflict. The poem, which is the longest and most important in Anglo-Saxon literature, is in many points obscure, and the manuscript is somewhat imperfect.

Bibliography.—Morley, *English Writers*, Vol. I. (1887); Ten Brink, *Early English Literature* (1883); translation by Garnett (1885); English prose translation by Tinker (1892). For editions of *Beowulf* consult Thorpe, Arnold, Wülker-Grein, Wyatt, etc.

BEPPU, *bĕp′poo*, Japan: a bathing place and seaport on the Island of Kyushu, famed for its hot alkaline baths.

BEQUEATH, v. *bĕ-kwēth′* [AS. *becwæthan*—from *be*, and *cwæthan*, to say]: to give or leave by will; to hand down to posterity. BEQUEATH′ING, imp. BEQUEATHED, pp. *bĕ-kwēthd′*. BEQUEST, n. *bĕ-kwĕst*, something left by will; a legacy. BEQUEATH′ER, n. one who bequeathes. BEQUEATH′MENT, n. the act of bequeathing; the state of being bequeathed; that which is bequeathed; a legacy. See WILL: LEGACY: DISPOSITION (*Mortis causa*): SETTLEMENT; REAL: PERSONALTY.—SYN. of 'bequeath': to devise: demise; transmit. In strict usage 'bequeath' applies rather to personal property, 'devise' to real estate (lands, buildings, etc.); yet the two are used often as synonyms.

BÉRANGER, *bā-ron-zhā′*, PIERRE-JEAN DE: 1780, Aug. 19—1857, July 17; b. Paris, in the house of his grandfather, a tailor in the Rue Montorgueil, to whose care he was left entirely by his father, a scheming and not over-scrupulous financier. After living some time with an aunt at Péronne, to whom he appears to have been indebted for those republican principles which afterwards made him obnoxious to successive French governments, B., at the age of fourteen, was apprenticed to a printer in that place, where he remained three years, devoting all his leisure to the acquirement of knowledge. He now returned to Paris, where his father, a zealous royalist, was engaged in some questionable schemes of money-getting, which were mixed with conspiracy. B. assisted him in his money affairs, so far as he honorably could, and kept his political secrets; but he did not disguise his contempt for the royalist cause, nor fail to express his opposite sympathies. The business, however, was not one to the taste of B., who was throughout the

whole of his life a man of the most sensitive honor, and he soon left it. He had ere this begun to write, but his poems were not successful, and reduced almost to destitution, he, 1804, enclosed some of his verses to M. Lucien Bonaparte, with a letter explaining his circumstances, and with a request for assistance—the one solitary instance of solicitation during a long life of independence, marked by the refusal of numerous offers of lucrative patronage. M. Bonaparte obtained employment for the poet, first as editor of the *Annales du Musée*, afterwards as a subordinate sec. in the univ.; a post which he held for twelve years, when the government, provoked at his satire, and alarmed at his popularity, dismissed him. During the 'Hundred Days,' Napoleon offered B. the remunerative post of censor—a singular office for such a man. He refused it. But though he scorned to accept favor from or to flatter Napoleon, at a time when it was alike fashionable and profitable to do so, he was of much too noble a nature to join in the sneers and reproaches which greeted the hero on his fall. Above the fear of power, he was incapable of taking advantage of misfortune. In 1815, B. published his first collection of songs, which soon attained very wide popularity. In 1821, he published another collection, followed by some fugitive pieces, which subjected him to a government prosecution, a sentence of three months' imprisonment, and a fine of 500 francs. In 1825, a third collection, and in 1828, a fourth appeared, still more withering in its sarcasm on those in power; and the penalty of B's outspokenness was a fine of 10,000 francs, and nine months' confinement in La Force. The fine was soon paid by the poet's friends, and his prison became the resort of the most eminent men in the kingdom, and a very armory in which he forged those keen-piercing bolts which galled so terribly, and contributed so much to the overthrow of the Bourbons. But B. refused to profit by the new state of things he had been instrumental in bringing about. Rejecting the emoluments and honor which his friends, now in power, were anxious to bestow, he retired to live in privacy at Passy. In 1833, he published a fifth collection of songs, when he took a formal leave of the public; and until his death, twenty-four years afterwards, he remained silent. In 1848, B. was elected a member of the Assemblée Constituante by more than 200,000 votes; but after taking his seat to show his appreciation of the honor conferred on him, he almost immediately resigned. He consistently rejected all the offered favors of the late emperor, as well as a graceful overture on the part of the empress, which he owned it cost him much to refuse. B. died at Paris, and the cost of his funeral was defrayed by the French government, and his remains were attended to the grave by the most distinguished men in all departments of literature. B. was as emphatically the poet of the French people as Burns was the bard of the Scottish peasantry. The same stanch and fearless independence, genuine manliness, sound common sense, and contempt for everything mean and hypocritical, characterized both men; and as poets, they differ in excellence only

as the sentiments of the French and Scottish people differ in their capacity to be turned into song. 'Neither friend nor enemy has as yet disclosed to us any speck on the heart, the honor, the genius, or the good sense of Béranger.' Since his death his *Last Songs*, written 1834–51, have been published, and also *My Biography* (Paris, M. Perrotin; London, Jeffs). See *My Biography; Memoirs of Béranger*, by M. Lapointe; and *Béranger et son Temps*, by Jules Janin (1866).

BERAR, *bā-rär'*. valley, locally in the Nizam's territories, but annexed politically to British India, for the maintenance of what is called the Nizam's Contingent. It is bounded on the n. by a detached portion of Scindia's dominions and the Nerbudda provinces; on the e. by Nagpoor; on the w., by Candeish; on the s., by two of the Nizam's remaining districts—Maiker Bassim and Mahur. It lies between 19° 30′ and 21° 40′ n. lat., and between 76° and 78° 2′ e. long.; 17,711 sq. m. It is traversed in its length by the Poornah—itself a tributary of the Taptee—which, with its numerous affluents, affords an ample supply of water to the valley, and, for other reasons, is peculiarly suitable to the cultivation of cotton. The transfer in 1853 from the Nizam to the British has proved favorable to this production; about 25 per cent. of the area is devoted to cotton. In the e. part there is a coal-field of 40 sq. m., and at Akolah, in Purana, there are salt wells. Ellichpore is the chief town, but is smaller than Oomrawutti (q.v.). Pop. (1901) 2,752,418.

BERATE, v. *bē-rāt:* to rate much: to scold.

BERATTLE, v. *bĕ-răt'll* [*be*, with, and *rattle*]: in *OE.*, to fill with noise; to make a great noise in contempt.

BERAY, v. *bĕ-rā'* [AS. *be*, about: OF. *ray*, dirt: Fin. *roju*, dung]: in *OE.*, to soil with ashes; to dirt; to defile. BERAY'ING, imp. BERAYED, pp. *bĕ-rād'*.

BERBER, n. a. *bėr'bėr*, a name used to designate the Semitic language formerly spoken in northern Africa or Barbary—now pushed back, with its various dialects, toward the interior. Also a member of the native race of that country.

BERBER, *bėr'bėr*, or DAR BERBER (also El Mekheir, or Mersherif): town on the right bank of the Nile, below the confluence of the Atbara; a station on the route from Khartoum to Cairo, and a point to which caravans come from Suakim on the Red Sea. It was proposed to make a railway from Suakim to Berber but the work was abandoned when military protection was taken away. Pop. about 10,000.

BERBERA: the chief port and town of British Somaliland, on the African coast, of the Gulf of Aden and south of Aden. It has a small but well-sheltered harbor and a long pier; a European quarter with stone houses and warehouses, and a native quarter laid out with broad streets but consisting chiefly of huts or sheds. There is a con-

siderable export trade in the products of the country, such as hides and skins, gums, ostrich feathers, ghee, sheep, goats, and cattle; rice, millet, dates, cottons, tobacco etc., being imported. The traffic is chiefly with Aden. The population is perhaps 5,000, increased to 30,000 during the trading season. The Somali Coast Protectorate extends along the coast for about 400 miles and inland for about 200, the area being about 80,000 square miles. Besides Berbera it contains also the ports of Zeilah and Bulhar. It was acquired in 1884, and is administered by a political agent and a consul. A number of Indian troops are stationed in the territory. The trade is of some importance and is increasing.

BERBERID'EÆ, or BERBERIDACEÆ, *bėr-bėr-ĭ-dā'sē-ē:* a nat. ord. of exogenous plants, of which the different species of Barberry (q.v.) afford the best known examples. Many of the plants of this order are spiny shrubs: some are perennial herbaceous plants. Their leaves are alternate, their flowers sometimes solitary, sometimes in racemes or panicles. The calyx consists of 3, 4, or 6 deciduous sepals; the corolla, which arises from beneath the germen, consists of petals equal in number to the sepals, and opposite to them, or twice as many; the stamens are equal in number to the petals and opposite to them; the anthers are 2-celled, each cell opening curiously by a valve which curves back from bottom to top; the carpel is solitary and 1-celled; the fruit is either a berry or a capsule. This order, nearly allied to *Vitaceæ* (q.v.), (Vines, etc.), contains more than 100 known species, chiefly belonging to the temperate parts of the n. hemisphere and of S. America.

BERBERINE, n. *bėr'bėr-ĭn* [L. *berbĕris*, the berberry—from Ar. *berbĕri*, wild]: alkaloidal substance in the form of needle-like crystals of a beautiful bright yellow, obtained from the root of the berberry shrub. BERBERRY, n. *bėr'-bĕr-ĭ*, the correct spelling of BARBERRY, a tree whose fruit is used as a preserve, and contains *oxalic acid;* the *Berbĕris vulgāris*, ord. *Ber'berĭdāceæ.*

BER'BERINE, a poisonous alkaloid discovered by Buchner in 1837 in the root of the common barberry, and now known to exist in many other plants also. It crystallizes, ordinarily, in yellow, silky needles, having the composition $C_{20}H_{17}NO_4+4\frac{1}{2}H_2O$; but when thrown down from solution in alcohol the needles are said to be red—probably from the absence of water. Berberine forms numerous salts, and is used to a considerable extent in medicine, occurring in notable quantities in preparations of hydrastis. The alkaloid itself is soluble in from four to five parts of water at ordinary temperatures, and is also moderately soluble in alcohol; but it is insoluble in both ether and chloroform.

BERBERS, *bėr'bėrz:* general name usually given to the tribes inhabiting the mountainous regions of Barbary and the n. portions of the Great Desert. It is derived,

according to Barth, either from the name of their supposed ancestor, *Ber*, which we recognize in the Lat. A-*fer*, an African (see letter B); or from the Greek and Roman term *Barbari*. The name by which they call themselves, and which was known to the Greeks and Romans, is Amázigh, or Mazigh, Mazys, Amoshagh, Imoshagh, etc., according to locality, and whether singular or plural. These tribes have a common origin, and are descendants of the aboriginal inhabitants of n. Africa. They appear to have been originally a branch of the Semitic stock; and although they have been conquered in succession by the Phœnicians, Romans, Vandals, and Arabs, and have become in consequence, to some extent, a mixed race, they still retain, in great part, their distinctive peculiarities. Till the 11th c. the B. seem to have formed the larger portion of the population inhabiting the s. coast of the Mediterranean, from Egypt to the Atlantic Ocean; but, on the great Arab immigrations which then took place, they were driven to the Atlas Mountains, and to the desert regions where they now live. In Tripoli, the allegiance that they pay to the Turks is little more than nominal; in Algeria, where they are usually termed Kabyles, they were long conquered by the French; and in Morocco, where they are called 'Shellooh,' they are only in form subject to the emperor. The B. occupying the desert, who are called Tuaric, or Tawarek, by the Arabs, have become much mixed with the negro race. The number of the B. is estimated at between three and four millions. They are of middle stature, sparely but strongly built. The complexion varies from a red to a yellow brown, and the shape of the head and of the features has more of the European than the oriental type. The hair is, in general, dark, and the beard small. The eyes are dark and piercing. Their manners are austere, and in disposition they are cruel, suspicious, and implacable. They are usually at war, either with their neighbors or among themselves; are impatient of restraint; and possessed of a rude, wild spirit of independence, which makes it impossible for them to unite for any common purpose, or to make the advances in civilization which might be expected from their high physical organization. They live in clay huts and tents; but in their larger villages, they have stone houses. They have herds of sheep and cattle, and practice agriculture, and are especially fond of the cultivation of fruit trees. They possess water mills and oil-presses. The mines of iron and lead in the Atlas are wrought by them, and they manufacture rude agricultural implements, and swords, guns, and gunpowder. They formerly professed the Christian religion; but since the Arabs drove them from the fertile plains between the mountains and the sea, they appear to have retrograded in every way, and they are now among the most bigoted adherents of the religion of Mohammed; although their former creed has left a few traces, as in the names *Mesi* for God, and *angelus* for angel, and many curious customs still observed among them.

BERBICE, *ber-bēs′:* eastern division of British Guiana, bounded w. by Demerara; n. by the Atlantic; e. by Dutch Guiana or Surinam; s. by the basin of the Amazon, or rather, perhaps, the upper waters of the Surinam and Corentyn. In 1796, Berbice, Demerara, and Essequibo were surrendered to the British under Maj.-gen. Whyte, but were soon restored to the Dutch at the peace of Amiens, and recaptured 1803. B. stretches in long. between 55° 40′–57° 20′ w.; in lat. s. from 6° 30′ n. It is subdivided into six parishes, four of which belong ecclesiastically to the Scotch National Church, and two to the Episcopalian. The principal products are sugar, coffee, cocoa, and tropic fruits. Cotton has nearly ceased to be grown. The forests abound with splendid timber trees, including the mora, bullet-tree, and cedar. The Berbice river, though not the largest in British Guiana, is navigable to the greatest distance from the sea. The Essequibo discharges a greater volume of water, but is interrupted by rapids within 50 m. of the coast, while the Berbice admits a draught of 12 ft. for 100 m., and one of 7 ft. for 60 more, the influence of the tide reaching nearly the whole way. Even as far as lat. 3° 55′ n., 175 m. in a straight line from its outlet, it has been found to have a width of 100 ft. with a depth of from 8 to 10. An important affluent is the Canje, on the banks of which a number of the most important plantations are situated. New Amsterdam, on the right bank of the Berbice river (pop. 9,000), is the chief town and port of the district. Pop. of B. abt. 51,000.

BERCETO, *bėr-chā′to:* town of Italy, in the province and 25 m. s.w. from the city of Parma, beautifully situated among the Apennines. It is a clean, well-built town. The church is an old Gothic building. The mountains rise rapidly to the west of B., and some of the scenery which they present is very wild and desolate.

BERCHE′MIA: see SUPPLE JACK.

BERCH′TA (in Old German, Peracta, and the original form of the name Bertha, being from the same root as the English word *bright,* and meaning 'shining,' 'white'): in the mythology of the south of Germany and in Switzerland, a spiritual being, who was apparently the same as the Hulda (gracious, benign) of northern Germany. This being represented originally one of the kindly and benign aspects of the unseen powers; and so the traditions of Hulda (q.v.) in the n. continued to represent her. But the B. of the s., in the course of time, became rather an object of terror, and a bugbear to frighten children; the difference probably arising from the circumstance, that the influence of Christianity in converting the pagan deities into demons was sooner felt in the s. than in the n. Lady B. has the oversight of spinners. The last day of the year is sacred to her, and if she find any flax left on the distaff that day she spoils it. Her festival is kept with a prescribed kind of meagre fare—oatmeal gruel, or pottage, and fish. She is represented as having a long iron nose

and an immensely large foot. That she was once an object of worship, is testified by the numerous springs, etc., that bear her name in Salzburg and elsewhere.

BERCHTESGADEN, *bĕrk'tĕs-gă-dėn:* village of Bavaria, charmingly situated on a mountain slope, about 15 m. s. of Salzburg. It has a royal hunting-lodge, but the place is most remarkable for its government salt-mines. During the residence of the court, the mine is sometimes illuminated, and its chambers are then seen to great advantage. Pop. 2,300.

BERCY, *bėr-sē':* town of France, dept. of the Seine, on the right bank of the river Seine. B. forms a suburb of Paris and its population is reckoned as a portion of that of the capital. It has a large business in wines and other liquors.

BERDAN, Hiram: inventor: about 1823–1893, Mar. 31; b. near Rochester, N. Y. He studied for a time at Hobart Coll., but his mind was interested in practical mechanics, and he entered a machine-shop in Rochester while a lad, on his own urgent request. Before he was of age he formulated the idea which resulted in the reaping-machine, and had made many other novel inventions or adaptations. He became interested in firearms and projectiles when the civil war broke out, and invented the ordinary metal cartridge still in use, besides the long-range rifle known by his name. B. was made col. and brev. brig.-gen. during the war, and commanded a body of U. S. sharpshooters. He was promoted to maj.gen. of vols. for gallantry at the battle of Gettysburg.

BERDIANSK, *bėr-dė-ănsk':* well-built seaport town of southern Russia, govt. of Taurida, on the n. coast of the Sea of Azov. B. has the finest roads in the Sea of Azov, and is a place of commercial activity, being the entrepôt for the products of surrounding governments. It trades in fish, wood, hides, tallow, grain, coal, and salt; there are extensive coal-mines and salt-lakes in its vicinity. Pop. 24,247.

BERE, n. *bēr* [AS. *bore;* Icel. *barr;* Meso-Goth. *baris;* L. *bar,* barley]: a variety of barley; bigg or barley-bigg.

BEREAVE, v. *bĕ-rēv'* [AS. *bereáfian,* to deprive of: *be,* and *reave,* which see]: to deprive of; to take from; to render destitute. Bereav'ing, imp. Bereft, pp. *bē-rĕft',* or Bereaved, pp. *bĕ-rēvd.* Bereavement, n. *bĕ-rēv'mĕnt,* a heavy loss, particularly of friends, by death.

BERENGARIANS, *bĕr-ĕn-gā'rĭ-anz:* the followers of Berengarius. Some held consubstantiation, but others anticipated the Zwinglian doctrine that the communion elements were only symbols and signs of the body and blood of Christ, and not that body and blood themselves.

BERENGARIUS OF TOURS, *bĕr-en-gā'rĭ-us:* 998–1088; b. Tours, France; distinguished scholastic theologian. His master, Fulbert of Chartres, is reported to have prophesied on his death-bed that B. would prove a danger-

ous man. In 1030 he was appointed preceptor of the school of St. Martin, in Tours, and 1040 made Archdeacon of Angers. Here he continued to deliver his metaphysico-theological prelections, and drew upon himself the charge of heresy, in reference to the doctrine of transubstantiation. He held the doctrine of Scotus Erigena, that the bread and wine in the sacrament of the eucharist remained bread and wine, and that the faith of the believer who recognized their symbolic meaning only transformed them subjectively into the body and blood of Christ. This interpretation was condemned by Pope Leo IX., 1049–50, and also by King Henry I. of France. In 1054, he retracted his opinion before the Council of Tours, but what B. meant by 'retraction' is not evident, for he immediately returned to his conviction, and recommenced the advocacy of it. For this he was cited to appear at Rome, where he repeatedly abjured his 'error,' but never seems to have really abandoned it. Hildebrand, then pope, treated him with great moderation; and at last, when he discovered how hopeless it was to bind down B. by abjuration or declarations, he conceived it best to let him alone. Harassed and weakened by the attacks of the orthodox party headed by Lanfranc of Canterbury, he finally retired to the isle of St. Cosmas, near Tours, 1080, where he spent the last years of his life in devotional exercises.

BERENGELLITE, n. *bĕr-ĕng′gĕl-īt* [from *St. Berengēlă* in Peru, S. Amer., where found abundantly; Gr. *lithos*, a stone]: an asphaltum-like mineral, of a dark-brown color with a green tinge, having a disagreeable odor and bitter taste.

BERENGER, *bĕr′ĕn-jĕr*, I., King of Italy: 9th c.; son of Eberhard Duke of Friuli, and of Gisela, dau. of the emperor Louis the Pious. He and Guido, Duke of Spoleto were the two most powerful and ambitious nobles then in Italy. After the deposition of Charles the Fat, 887, B., Guido, and Adalbert, Count of Tuscany, became candidates for the Carlovingian throne. B. was crowned king of Italy at Pavia, 888, while Guido attempted to secure the realm of France. The former soon irritated the nobles against him by condescending to hold his territory in fief from Arnulf, King of Germany, against whom he found it vain to maintain his independence; and when Guido returned from his unsuccessful expedition to France, he was persuaded to put himself in opposition to B., and was chosen king of Italy. With the help of Arnulf, however, B. ultimately prevailed. After the death of Guido, 894, his son Lambert compelled B. to share with him the sovereignty of n. Italy; but, on the assassination of Lambert, 898, B. contrived to obtain possession of the whole of Lombardy. His influence quickly sank. He could check neither the plundering incursions of the Hungarians across the Alps in the n, nor those of the Arabs, who laid waste the shores of the s. The nobles now called in Louis, King of Lower Burgundy, who was crowned at Rome, 901; but

he proved no better, and was finally overpowered by Berenger. In 915 B. was crowned emperor by Pope John X.; but the nobles, who appear to have kept themselves during his reign in a state of chronic disaffection, again revolted, and, 919, placed themselves under the banner of Rodolf of Burgundy, who completely overthrew B., 923, Jul. 29. The latter, in his extremity, called in the Hungarians to his aid, which unpatriotic act alienated the minds of all Italians from him, and cost him his life, for he was assassinated in the following year.

BERENGER II., King of Italy: (d. 966); son of Adalbert, Count of Ivrea, and grandson of Berenger I., succeeded to his father's possessions 925, and married Willa, niece of Hugo, King of Italy, 934. Incited by his ambitious and unscrupulous wife, he conspired against Hugo, and in consequence was compelled to flee to Germany, where he was received in a friendly manner by the emperor Otto I. In 945, he recrossed the Alps at the head of an army. The nobles and the townspeople both welcomed him; but, instead of assuming the crown himself he handed it over to the weak Lothaire, the son of Hugo. On the death of Lothaire, who was probably poisoned by Willa, B. allowed himself to be crowned along with his son Adalbert, 950. To establish himself firmly in his new position, he wanted Adelheid, the youthful widow of Lothaire, to marry his son. She refused, and was subjected to a most cruel imprisonment, but ultimately found a helper and husband in the emperor Otto himself, who, at the imperial diet of Augsburg, 952, compelled B. to acknowledge Italy a fief of the German empire. B. soon afterwards engaged in war with the emperor, who sent his son Ludolf against him. Ludolf was successful, but died 957, of poison administered, as was believed, by Willa. B. again mounted the throne, but behaved with such intolerable tyranny that his subjects and Pope John XII. called in the aid of the emperor, who marched into Italy 961, and took possession of the country. B. took refuge in a mountain fortress, where he held out till 964, when hunger compelled him to capitulate. He was sent as a prisoner to Bamberg, in Bavaria, where he died. His wife, Willa, retired into a convent, and his three sons died in exile.

BERENICE (modern name, Sakáyt-el-Kublee, 'Southern Sakáyt'): town of Egypt, on a bay in the Red Sea, 20 m. s.w. of Ras Benass. It was founded by Ptolemy Philadelphus, and was in ancient times the emporium of the trade with India, but it is now ruined, and interesting only for its antiquities, which include hieroglyphics, sculptures, and a temple dedicated to Serapis. There are emerald mines in its vicinity that have been worked since the time of the ancient Egyptians.

BERENICE, *bĕr-ē-nī'se:* the name of several celebrated women of ancient times.

BERENICE, dau. of Lagus and Antigone, and second wife of the Egyptian king, Ptolemy I. (Soter); (B.C. 323—284). She is described by Plutarch as the first in virtue and wis-

dom of the wives of Ptolemy. Theocritus celebrates her beauty, virtue, and deification in his *Idyls*, 15 and 17.

BERENICE, dau. of Ptolemy II. (Philadelphus) and Arsinoë; married to Antiochus II. of Syria, after he had divorced his wife Laodice, whom, however, he took back, putting B. away. Laodice, having no faith in her husband, poisoned him, and caused B. and her son to be murdered.

BERENICE, dau. of Magas, King of Cyrene, granddaughter of B. No. 1, was to have been married to Demetrius the Fair, but he having slighted her for her mother, she caused him to be murdered, and then went to Egypt and married Ptolemy III. (Euergetes), in accordance with the terms of a treaty between her father and Ptolemy II. During the king's wars in Asia, the Queen B. made a vow to offer her beautiful hair to the gods when her husband returned safely—a vow which she fulfilled. The hair was suspended in the temple of Venus, whence, it is said, it was taken away to form a constellation, *Coma Berenices.* B. was put to death by her son, Ptolemy IV. (Philopator), when he succeeded to the throne.

BERENICE, also called Cleopatra, dau. of Ptolemy IX. (Lathyrus), was, on her succession to the throne, married to Alexander II., by whom she was murdered 19 days after marriage.

BERENICE, dau. of Ptolemy XI. (Auletes), eldest sister of the renowned Cleopatra, was raised to the throne after her father's deposition, B.C. 58, but was put to death when her father was restored, B.C. 55. She was first married to Seleucus, whom she caused to be poisoned, and afterwards to Archelaus, who was put to death with her.

BERESFORD, LORD CHARLES WILLIAM DE LA POER: English naval officer; b. 1846, Feb. 10; entered the navy 1857; became rear-admiral 1897. He accompanied the Prince of Wales (Edward VII.) to India 1875–76, as naval aide-de-camp, and held the same relation to Queen Victoria 1896–97. In 1882, after the bombardment of Alexandria, during which he commanded the *Condor*, he organized a police system for the city. In 1898 the Associated Chambers of Commerce of Great Britain sent him to China to examine the complicated commercial conditions prevailing there. He commanded the Mediterranean fleet 1905-7 and the Channel squadron 1907-9. He has done much to promote the "open door" commercial policy in China.

BERESFORD, *bĕr'ĕs-ford*, WILLIAM CARR, Viscount 1768, Oct. 2—1854, Jan 8; nat. son of the first Marquis of Waterford; distinguished military commander He entered the army, 1785; served in various parts of the world: was conspicuous in the reconquest of the Cape of Good Hope, 1806, and with the rank of brig gen., was with the British force that took possession of Buenos Ayres. In 1808, Aug., he joined the British army in Portugal, and proceeded into Spain with Sir John Moore's force was present at the battle of Corunna and after covering the embarkation of the troops, returned with them to England

In 1809, Feb. Maj gen B was ordered a second time to Portugal, to take the command of the Portuguese army, with the local rank of lieut.gen. Appointed Marshal of Portugal in March, at the head of 12,000 men he attacked the French in the n. of that kingdom, crossed the river Douro, drove Loison's division back to Amarante, and uniting with the force under Sir. Arthur Wellesley, pursued it in its retreat till it was utterly disorganized. For his services at the battle of Busaco, 1810, Aug. 27, B. was nominated a Knight of the Bath. He commanded at the bloody battle of Albuera, 1811, May 16; and for the victory there gained over Soult, he received the thanks of parliament. He was present at Badajoz; at Salamanca, where he was severely wounded; at the various battles on the Pyrenees; at Nivelle, where he led the right of the centre; at Nive; and at Orthez. He was in command of the British troops which took possession of Bordeaux, and subsequently distinguished himself at the battle of Toulouse In 1814, May, he was created Baron, and in 1823 Viscount Beresford. By the Portuguese government, he was sent, 1814, to Rio Janeiro, to suppress a formidable revolt there. In the Wellington administration, 1828, Jan.–1830, Nov., he was master gen. of the ordnance. He bore the title of Marquis of Campo Mayor and Duke of Elvas in Spain, Conde de Francoso in Portugal, and was knight of several foreign orders. He died without issue, and the title became extinct.

BERESINA, or Berezina, *bĕr-ė-zē'nâ:* river of Russia, having its rise in the n. of the govt. of Minsk. It flows s. for about 340 m. to the Dnieper, which it joins above Redchitzka. It is connected with the Düna, or Dwina, by a canal, a communication between the Black and Baltic seas being thus established. The B. is memorable on account of the disastrous passage of the French army, 1812 Nov., during the retreat from Moscow. Two bridges over the B.—one for troops, the other for baggage and artillery—were hastily constructed. Many of the *pontoniers* died from the hardships endured in making these bridges. On the 27th, the passage of the French commenced, and was continued during the whole of the day. Victor's rear-guard of 7,000 men, under Partonneaux, were, however, intercepted by the Russians, and had to capitulate On the 28th, a vigorous attack was made by the Russians on the French on both sides of the river, but too late to prevent the latter securing the road to Zembin. The Russians, however, established a battery of twelve pieces to command the bridge, and the panic and confusion of their enemies now became dreadful. The artillery bridge broke, and all rushing to the other, it was soon choked; multitudes were forced into the stream, while the Russian cannon played on the struggling mass. On the 29th, a considerable number of sick and wounded soldiers, women, children, and sutlers, still remained behind, despite the warnings of Marshal Victor and General Eblé, until preparations were made for burning the bridges. Then a fearful rush took place; and as the fire seized the timbers, men, women, and children threw them-

selves in desperation into the flames or the river. 12,000 dead bodies found on the shores of the river, when the ice thawed, attested the magnitude of the French disaster. The Russians took 16,000 prisoners and 25 pieces of cannon.

BERETTYO-UJFALU, *bā-ret'yo-ô-ē-fâ'lô:* market-town of Hungary, county Bihar. Pop. (1880) 6,122.

BEREZNA, *bā-rĕz'nâ:* town of Russia, govt. of Tchernigov, on the Desna. Pop. abt. 10,000.

BEREZOV, or BERESOFF, *bĕr-ez-of'* ('the town of birch-trees'): town of Siberia in the govt. of Tobolsk, on the left bank of the Sosva, a branch of the Obi, in lat. 63° 30′ n. It is a small place, but important as the sole fur and skin trading station in a vast extent of country. Its annual fair is largely attended. It is the favorite residence of the Ostiaks and Voguls. Prince Menschikoff, the favorite of Peter the Great, who was banished to B., died and was buried here 1731. His grave was opened 90 years afterwards, when his body, clothed in the uniform of the time, was found as free from decay as on the day it was buried, the frost, which at B. penetrates the soil to the depth of several feet, having preserved it. Pop. 2,000.

BERG, or BURG, or BURGH: roots entering into the composition of many names of places. *Berg* (Ger.), *Beorg* (Ang.-Sax.), means 'hill,' 'mountain;' and *burg*, or *burgh*, means 'fort,' 'castle,' 'citadel,' probably from being situated on a hill or eminence. See BOROUGH: BURGH.

BERG, n. *bĕrg* [Sw. *berg;* AS. *beorh*, a mountain]: a hill, generally of ice; a contr. of ICEBERG, which see. BERGMAHL, or -MEHL, *bĕrg-māl'* [Sw. mountain-meal]: a recent infusorial earth of a whitish color and mealy grain, also called *fossil farina*, common in bog and ancient lake deposits. It is a powder of extreme fineness, composed almost entirely of the indestructible silicious frustules or cell-walls of *Diatomaceæ* (q.v.). From its resemblance to flour, it has been mixed with ordinary food, in seasons of scarcity, and thus used by the inhabitants of Norway and Sweden, who suppose it to be nutritious. When subjected to a red heat, it loses from a quarter to a third of its weight, the loss consisting probably of organic matter, and this would make it in itself nutritious; but it seems to derive its chief value from its increasing the bulk of the food, thereby rendering the really nutritious portion more satisfying. There have been experiments tending to show that B. does contain a very small proportion—3 or 4 per cent.—of positive nutriment. Similar deposits occur at Dolgelly in North Wales, at South Mourne in Ireland, and in Mull and Raasay in the Hebrides. The contained organisms show that these beds have been deposited in fresh water.

BERG: formerly a duchy of Germany, now incorporated with the Prussian dominions, and divided into the circles of Düsseldorf, Solingen, Elberfeld, Lennep, and Duisburg. After various vicissitudes, B. had merged in the electorate

of Bavaria. In 1806, Bavaria ceded it to France; and Napoleon the same year, adding to it large adjoining territories, made its area about 6,700 sq. m., and erected it into a grand duchy, constituting his brother-in-law, Murat, sovereign. Two years afterwards, Murat being transferred to the throne of Naples, Napoleon's nephew, then crown prince of Holland, was made grand duke. The peace of 1815 gave B. to Prussia.

BERGA, *bĕr'gâ:* town of Catalonia, Spain, near the river Lobergat, 52 m. n.n.w. from Barcelona. Its streets are paved, but mostly narrow and crooked. It has five squares, three churches, several convents, a hospital, schools, etc. It is overlooked and defended by a castle with a strong battery. The people are employed mostly in husbandry and as muleteers; the produce of the fields vineyards, and olive-yards of the neighborhood giving rise to a considerable trade. Cotton fabrics are also manufactured in B., and this branch of industry is on the increase. Pop. (1903) 6,072.

BERGAMA, *bĕr'ga-ma* (ancient *Pergamos*): city of Asiatic Turkey, vilayet of Khodavendikhiar; in a beautiful and fertile valley, on the right bank of the Caicus, about 40 m. n.n.e. of Smyrna; lat. 39° 4′ n., long. 27° 12′ e. In early times, the city was the cap. of the kingdom of Pergamus (q.v.). Many ruins still exist to attest the former magnificence of B. Present pop. about 6,000, half Greeks, half Turks.

BERGAMO, *bĕr'gâ-mō* (the ancient *Bergomum*): fortified town of Lombardy, on some low hills between the Serio and the Brembo, about 29 m. n.e. of Milan; lat. 45° 42′ n., and 9° 37′ e. B. consists of two parts—the upper city, wherein the nobility, an exclusive class, reside; and the Borgo, a suburb where business is transacted. B. is well built, has a castle occupying the most elevated part of the town, and a cathedral. Silk, cotton, linen, woolen fabrics, and iron goods are manufactured. It has also an extensive trade in grindstones, quarried in the vicinity. Annually, in Aug., the largest fair in n. Italy is held here, at which money to the estimated amount of $6,000,000 is turned over. Under the Roman empire, B. became a municipal town of importance. It was destroyed by Attila, 452; and after the fall of the Roman empire, it became one of the chief towns of the Lombard kings in this part of Italy, and cap. of a duchy. After numerous changes, its inhabitants placed themselves under the protection of the Venetian Republic, 1427, and formed an integral portion thereof (with one exception of 9 years) until the subversion of the republic by Napoleon, 1797. Bernado Tasso, the father of Torquato, and Tiraboschi, author of *The History of Italian Literature*, were natives of B. Pop. (1901) 47,772.

B. is the cap. of the province of Bergamo, 1,098 sq. m., having good pasturage for sheep and goats; also supplies of iron, marble, lignite, and whetstones. Pop. of province (1901) 459,594.

BERGAMOT, n. *bėr'gă-mŏt* [F. and Sp. *bergamote*—from It. *bergamotto*]: species or variety of the genus *Citrus* (q.v.), called also B. ORANGE, or MELLAROSA; by some botanists regarded as a variety of the orange (*C. Aurantium*); by others as a variety of the lime (*C. Limetta*); and elevated by Risso to the rank of a distinct species, under the name of *C. Bergamia*. Of its native country or origin nothing can be told, except that it was probably derived, like its congeners, from the East. It is now cultivated in the s. of Europe; and from the rind of its fruit the well-known OIL of B. is obtained, extensively used in making pomades, fragrant essences, eau de Cologne, liqueurs, etc. The fruit is pear-shaped, smooth, of a pale-yellow color, and has a green, subacid, firm, and fragrant pulp. The essential oil is obtained by distillation, or by grating down the rinds, and then subjecting them to pressure, which is the better method. The oil is also obtained from other varieties or species of the same genus. It is of a pale-yellow color, or almost colorless. One hundred B. oranges are said to yield about 2½ ounces of oil. Oil of B. is frequently employed for diluting or adulterating the expensive blue volatile oil of chamomile (q.v.).

Tapestry of a coarse kind, first made at *Bergamo*, Italy, is called Bergamot.

B. is the name also of various kinds of pear, to which, however, no common distinctive character can be assigned. The proper B. pear is probably the *B. Crasanne*, a flattish, rough-skinned pear with a long stalk. It has a very juicy pulp, as soft as butter, of an extremely pleasant flavor, and is esteemed as one of the best dessert pears.

BERGANDER, n. *bėr-găn'dėr* [*berg*, and *gander*]: European Shell-drake or Burrow-duck, *Tadorna vulpanser*.

BERGEDORF, *bĕrg'ė-dorf:* town of Germany, 10 m. e.s.e. from Hamburg. When Lübeck joined the Zollverein, 1868, it resigned to Hamburg, on payment of 200,000 thalers, its share in the government of B. and its small territory. Part of the territory is known by the name of the Four Lands (*Vierländer*). It is inhabited by a well-conditioned and industrious population, much occupied in the cultivation of fruit and vegetables for the market of Hamburg, and for that of London. Peach and apricot orchards, and fields of strawberries, extend over great part of the district. Cattle-husbandry is carried on, and much attention is given to the rearing of poultry. The town of B. has flourishing glass works and manufactures of enamelware. Pop. of the town (1900) 10,243.

BERGEN, n. *bėr'gĕn:* in *s. Africa*, a range of mountains.

BERGEN, *bėrg'en:* seaport town of Norway, province of B.; on a promontory at the head of a deep bay, called Vaagen: lat. 60° 24′ n., long. 5° 18′ e. With the exception of the n.e. side, where lofty mountains enclose it, B. is surrounded by water. It is walled, and additionally protected by several forts, mounting in all upwards of 100 guns. The entrance to the harbor is dangerous without

a pilot; but within, it is safe and commodious. B. is built in a semi-circular form round the harbor, and has a picturesque appearance from the sea. A close inspection discovers it to be generally well and substantially built, but many of the streets are crooked and narrow. It has a cathedral, various churches, hospitals, refuges for the poor, public libraries, etc.; is the seat of a secondary judicial tribunal, of one of the three national treasuries, the diocese of a bishop, and the station of a naval squadron. Its chief manufactures are tobacco, porcelain, and cordage. It has numerous distilleries, and some ship-building yards. The principal trade of B., however, is its export of stockfish (dried fish of the cod family), cod-liver oil and herring, which it obtains from the n. provinces. The chief imports are brandy, wine, corn, cotton, woolens, hemp, sugar, coffee, etc. The climate of B. is exceedingly humid, but not unhealthful. B. was founded 1069 or 1070, by Olaf Kyrre, who made it the second city in his kingdom, and it was soon raised to the first rank. In 1135, King Magnus had his eyes put out here by his rival, Harald Gille, who was himself murdered in B. a year after. In 1164 the legate of the pope crowned King Magnus Erlingson here; and here, a century afterwards, King Hakon was crowned. The black pestilence, which ravaged Norway, first made its appearance in B., 1348, and the city has since been several times devastated by it. The first treaty entered into with any foreign nation by England, was made with B., 1217. But the English and Scottish traders were soon displaced by the merchants of the Hanse towns, who continued to exercise and abuse their monopoly until their supremacy was broken by an act issued by Frederick II. of Denmark, 1560; and in 1763 their last warehouse fell into the hands of a citizen of Bergen. B. was long the most important trading town of Norway, but has been recently surpassed by Christiania. Pop. (1900) 72,251.

BERGEN-OP-ZOOM, *bėrg'en-ŏp-zōm:* town, formerly strongly fortified, in the province of North Brabant, Netherlands, about 20 m. n. of Antwerp: on the little river Zoom, at its entrance into the e. branch of the Scheldt; lat. 51° 29′ n., long. 4° 17′ e. The importance of its position rendered it the object of many a contest. The Netherlanders made it one of their strongholds in their struggles with Spain. The Prince of Parma besieged it in vain, 1588; three assaults by the Spaniards, 1605, also failed, as did the siege by the Marquis of Spinola, 1622, which, after a duration of 78 days and a loss of 10,000 men, was raised on the arrival of Prince Maurice of Orange. The French, under Count Löwendal, 1747, after a siege of two months, and the springing of 41 mines by the assailants, and 38 by the defenders, took the place by storm. The French gave up the fortress under the Treaty of Paris. B. has manufactures of earthenwares, and a large trade in anchovies. Pop. abt. 14,000.

BERGERAC, *ber-zhė-râk':* town of France, dept. of

Dordogne, about 25 m. s.s.w. of Périgueux. It is in a fertile plain on the right bank of the river Dordogne, here crossed by a fine bridge of five arches. Its principal manufactures are paper, serges, hosiery, hats, earthenware, and iron and copper articles. It is the entrepôt of the trade of the dept. The dept. of Dordogne is celebrated for its wine, which is called B. wine, and also *small champagne*. It is both white and red in color, and takes a high place among the Garonne and Bordeaux wines. B. was taken and fortified by the English 1345, who, after being driven out by Louis of Anjou, again got possession of it, and retained it until 1450. B. suffered greatly in the religious wars. It was dismantled by Louis XIII., 1621. Pop. abt. 16,000.

BERGERAC, Savinien Cyrano de: French author; b. 1619; distinguished for his courage in the field, and it is said in over 1,000 duels. His writings include a tragedy, *Agrippina; The Pedant Tricked*, from which Molière and Corneille borrowed many ideas; and *Comical History of the States and Empires of the Sun and Moon*, which probably suggested *Gulliver* to Swift, and *Micromégas* to Voltaire. Edmund Rostand, the French playwright, made him the hero of a drama, named after him, which 1899–1900 was very popular in the U. S., but resulted in a suit for plagiarism. D. 1655.

BERGERET, n. *bėr'gėr-ĕt* [F. *bergerette*, a shepherd girl —from *berger*, a shepherd]: in *OE.*, a pastoral song.

BERGH, *bėrg*, Henry: philanthropist: 1823–1888, Mar. 12; b. New York. He attended Columbia Coll., without graduating; and after five years in Europe, was appointed sec. of legation at St. Petersburg, which position he held 1862–64. Returning to America be began a career of devotion to the care and protection of animal life, unexampled in history, the idea having occurred to him on account of cruelties to dumb creatures which he had witnessed in Europe. He framed a bill and secured its passage through the legislature of the state of New York, 1866, April 10, incorporating the first soc. for the prevention of cruelty to animals, of which he was pres. until his death (see Animals, Cruelty to). B. succeeded by earnest personal endeavor in having similar socs. organized during his life in nearly every state in the Union, and in several foreign countries. In New York the soc. has several times received large sums by bequest.

BERGHAUS, *bĕrg'hows*, Heinrich: 1797, May 3—1884, Feb.; b. Cleves, Rhenish Prussia: geographer. He was educated at Münster. In 1816, he was made 'geographical engineer' in the war dept. in Berlin, and was employed on the trigonometrical survey of Prussia, and became (1824) prof. of mathematics in the Architectural Acad. of Berlin (a post which he held till 1855) and (1836) director of the Geographical School in Potsdam. The best known of his chartographical works is his *Physical Atlas* (90 plates, 2d ed., 1852), which forms the basis of John-

ston's work published in Edinburgh. He edited several geographical periodicals, such as his *Geog. Jahrbuch* (Geog. Annual). Of a more popular nature are his *Physikalische Erdbeschreibung* (Physical Description of the Earth), *Grundlinien der Staatenkunde* (Outlines of the Political Character of States), and *Ethnographie*, all of which appeared 1846–50. Other works are *Länder und Völkerkunde* (1837–40), and *Die Völker des Erdballs* (1845–47). In 1855, he published a work entitled *Was man von der Erde weiss* (What is known of Earth). In 1862, appeared his *Landbuch von Pommern;* and in 1863, *Briefwechsel Alexander von Humboldt's mit H. Berghaus.*—His nephew, HERMANN B., b. 1828, Nov. 16; d. 1890, Dec. 3, was also a distinguished cartographer. Among his many publications were *Berghaus's Physikalischer Atlas.*

BERGHEM, *bĕrg'hem*, NICHOLAS: 1624–1683; b. and d. Haarlem: Dutch painter. He studied painting first under his father, afterward under Van Goyen, Weenix the elder, and other masters. He had extraordinary facility of execution and great industry; and his landscapes decorate the best collections in Europe. They show warm coloring, natural and original grouping, with occasional lack of truth in outline. His etchings are highly esteemed.

BERGLER, *bĕrg'ler*, JOSEPH: 1753–1829; b. Salzburg: historical painter. Having studied under Martin Knoller at Milan, and then in Parma, he returned to Germany, and settled at Passau 1786, where he was appointed painter to Cardinal Auersperg, prince-bishop, and painted many fine altar-pieces. From 1800 till his death he resided in Prague as director of the Acad. B. gave marked impetus to the fine arts in Bohemia, and his school furnished a number of eminent artists. One of his principal works is a *Cyclus* of important events in the history of Bohemia, in 66 sheets.

BERGMAN, *bĕrg'mân*, TORBERN OLOF: 1735, Mar. 9—1784, July; b. Katharinberg, West Gothland, Sweden: chemist. He was sent at 17 years of age to the Univ. of Upsala, to study for either the church or the bar; but disliking both these professions, he turned to natural history, physics, and mathematics, and soon made interesting discoveries in entomology, while he also distinguished himself as an accurate astronomical observer. In 1767, B. was elected to the chair of chemistry at Upsala, and continued in it till his death at Medevi. B. published a vast number of dissertations, the most important of which are collected into six octavo volumes under the title of *Opuscula Torberni Bergman Physica et Chemica* (Leip. 1779–81). His essay on *Elective Attractions* was translated into English by Dr. Beddoes.

BERGMASTER, n. *bĕrg'măs-tĕr* [AS., Ger., or Sw. *berg*, a mountain or mine; and *master* (see BERG)]: the chief officer or judge among the Derbyshire miners. BERGMOTE, n. *bĕrg'mōt* [AS. *berg, gemote*, an assembly]: a court or assembly for deciding all causes and disputes among the Derbyshire miners.

BERGMEAL, n. *bĕrg'mēl* [Ger. *bergmehle*]: a white cotton-like variety of carbonate of lime, occurring as an efflorescence, falling into powder when touched. Mixed with flour, it has been used in time of scarcity for food.

BERGUES, *bĕrg:* town of France, dept. of the Nord, about 5 m. s.s.e. from Dunkirk. It is on the Colme, at the foot of a hill, was strongly fortified by Vauban, and has the means of flooding the valley with water. The canal of B., which admits vessels of 300 tons burden, unites it with Dunkirk and the sea, and its favorable situation makes it the entrepôt of the produce of the adjoining country. It has manufactures of soap, tobacco, and earthenware, also sugar and salt refineries. B. was walled and fortified first by Baldwin II., Count of Flanders; and Baldwin IV. erected a splendid abbey, of which two towers only remain, in honor of St. Winnoc, who retired here in the beginning of the 10th c. Between the 13th and 16th c. B. suffered much from wars, and changed masters several times. Pop. abt. 5,000.

BERHAMPORE, or BURHAMPORE: town in British India, presidency of Bengal; in the dist. of Moorshedabad; on the left bank of the Bhagirathi or Bhagruttee, which, itself the first offset of the Ganges, afterwards joins another great offset, the Jellinghee, to form the Hoogly. B. is in n. lat. 24° 5′ and e. long. 88° 17′; 118 m. by land, and 161 by water, from Calcutta. It has long been one of the principal military stations of British India and the first open act of the Sepoy mutiny took place here 1857, Feb. 25. The grand square, enclosing a spacious parade-ground, is particularly striking. There are here a college, hospitals, and mission churches. B. is the seat also of a civil establishment. Pop. abt. 24,000.

BERIBERI: a disease occurring with great frequency in certain tropical regions, especially Brazil and the Malay Archipelago, and in Japan where it is called Kakké, and occasionally encountered in Australia, Ireland and India. It has also been found in Newfoundland and in portions of the United States. The cause of the disease is not definitely known. In Japan it is believed to be due to an almost exclusive diet of rice, and its practical exhibition in the Japanese Navy following a change to a more varied dietary lends weight to this theory. Others claim that it is due to carbonic acid (carbon dioxide) poisoning, but the trend of medical opinion is towards the opinion that it is due to infection by some microbe, as yet undiscovered. The disease usually begins gradually with vague pains in various parts of the body and muscular weakness in the lower extremities, though occasionally its onset is very sudden. The attacks of pain and debility are at first intermittent but later become almost continuous, and the muscles of the upper extremity and those concerned in respiration are involved, giving rise to difficulty in breathing. At this time diarrhea appears and examination generally reveals a little puffy swelling over the arter-

ior surface of the legs. Palpitation of the heart is also a common symptom. There is also a painful sensation of the muscles on pressure. As the disease progresses the muscular weakness may increase to a condition of actual paralysis; this is seen in the form called 'dry' B. In other cases the swelling progresses until there is a condition of general dropsy; this is the 'wet' form of the disease. Sometimes there are both paralysis and dropsy, and then the disease is known as 'mixed' B.

These forms are not sharply separated, but may pass one into the other. The disease is essentially a peripheral neuritis, or inflammation of the nerves. In treatment it is very necessary to take the patient away from the place in which he acquired the disease and to put him in other surroundings. A nutritious, but non-stimulating, diet is called for. Absolute rest must be insisted on and the open-air treatment, such as is employed in tuberculosis, is found to be very beneficial.

BERING (or Behring), *bēr'ĭng*, Vitus: 1680–1741, Dec. 19; b. Horsens, Denmark: famous navigator. In 1704, he entered as captain the newly-formed navy of Peter the Great. From his ability and daring in the wars with Sweden he was appointed to conduct an expedition of discovery in the sea of Kamtchatka. Sailing, 1728, from a port on the e. of Kamtchatka, he followed the coast n. until he believed, from the westward trending of the land, that he had reached the n.e. point of Asia. It is now, however, believed that the cape which B. rounded was the s. of the real East Cape (lat. 66°), and that he never actually reached the strait to which he has given his name. After some years spent in explorations on the coasts of Kamtchatka, Okhotsk, and the n. of Siberia, he sailed, 1741, from Okhotsk toward the American continent, and sighting land about 58½° n. lat., he followed the coast northward for some distance; but sickness and storms obliged him to return. He was wrecked on the desert island of Avatcha, since called Bering's Island, and died there. The previous year he had founded the present settlement of Petropaulovski, in the Bay of Avatcha.

BERING SEA, or Behring's Sea, or Sea of Kamtchatka: a part of the north Pacific Ocean, bounded w. by Kamtchatka, e. by Alaska, s. by the Aleutian Islands and n. by Bering Strait; extreme dimensions n. to s. about 1,000 m.; e. to w. somewhat more; its triangular shape, however, makes its area less than these figures might indicate. There are several islands in this sea, and fogs prevail constantly; but owing to the shallowness of the strait there are no great icebergs. The Pribyloff Islands in this sea are about 250 m. n. of the Aleutian Islands.

BERING SEA ARBITRATION: decision of a controversy between the United States and Great Britain concerning the catching of seals in Bering Sea, arranged by a treaty signed at Washington 1892, Feb. 29, whose ratifications

were exchanged at London, May 7. When Russia ceded Alaska to the United States 1867, she ceded therewith the Pribyloff Islands in the s.e. portion of that sea, and whatevers rights in Bering Sea had pertained to Russia in virtue of her possession of the territory adjacent. It was early contended by some that among her rights thus possessed and transferred was sovereignty over Bering Sea: this was met by the contention of the British govt. that though Russia might have exerted such sovereignty, making that sea *mare clausum*, that claim had never been conceded by other powers, and had been expressly combated by both Britain and the United States; and that consequently the United States as succeeding to Russia's rights had, by its own prior contention, vitiated such a claim.

The status of the international controversy regarding the right of the United States to control absolutely the taking of seals in Bering Sea, was (1891, Jan.) in general outline as follows.—The United States maintained: (1). The Pribyloff Islands were bought by the United States from Russia 1867. Through the whole period of Russian possession, citizens of the United States and of all other nations refrained from molesting the seals in the open water, and all govts. permitted Russia to control the catching of fur seals in Bering Sea: thus was acquired or acknowledged a right by Russia which passed to the United States in the purchase of the islands. This right, however, was pressed, not (as had been the earlier contention of some) to the extent of claiming Bering Sea as a 'closed sea,' but only so far as needful for preservation of the seals. (2). The United States owns and possesses the land to which the seals resort, and is therefore in equity entitled to protect the seals from destructive attack while they are approaching or leaving their breeding-place at the islands. Pelagic sealing as now conducted threatens the rapid extermination of this species so valuable to man.—Great Britain maintained: (1). Bering Sea is a part of the high seas and open to all the world: the mere abstention of all other govts. and peoples from killing fur seals in that sea gave Russia no right to prevent the killing of seals whenever any other persons than Russians saw fit to engage in it; and if Russia had no such right she could have transferred no such right to the United States. (2). Seals are wild animals; and when they enter the waters of the open sea, any person is entitled to capture them.

Between 1886 and 1890, U. S. revenue cutters in Bering Sea made numerous seizures of sealing vessels flying the British flag, the result of which was a protracted diplomatic controversy, threatening at times to embroil the two nations in war. After full discussion between Lord Salisbury, Brit. prime minister, and Mr. Blaine, U. S. sec. of state, the two govts. finally decided to submit to arbitration the whole question of the jurisdictional rights of the United States in Bering Sea, the preservation of the fur seal, and the rights of the citizens or subjects of either country as to the taking of seals. A treaty to that effect was signed 1892, Feb. 29, and ratified May 7. A *modus vivendi*, concluded

1891, June 15, established a close season; and both govts., in reviewing it, 1892, Apr. 18, resolved to submit to arbitration the question also of compensation for abstention from the right to take seals 'during the pendency of the arbitration.'

The *personnel* of the tribunal of arbitration comprised seven members: John M. Harlan, of Ky., associate justice of the U. S. supreme court, and Senator John T. Morgan, of Ala., appointed by the pres. of the United States; Sir James Hannen, judge of the probate, divorce, and admiralty division of her Britannic majesty's high court of justice, and Sir John S. D. Thompson, Canadian prime minister, appointed by the queen of England; Baron de Courcelles (elected pres. of the court), appointed by the pres. of France; Marquis Visconti Venosta, appointed by the king of Italy; and Justice Gregero W. W. Gram, of the supreme court of Christiania, appointed by the king of Sweden and Norway. General John W. Foster, of Ind., was the U. S. agent; and the Hon. C. H. Tupper, Canadian minister of marine and fisheries, was the Brit. agent. The leading U. S. counsel were the Hon. E. J. Phelps, of Vt., James C. Carter and Frederick R. Coudert, of N. Y.; while Sir Charles Russell, Sir Richard Webster, and Christopher Robinson, Q. C., were the leading Brit. counsel.

The sessions of the tribunal were held in Paris, 1893, Feb. 23—July 8. The decision of the arbitrators was announced Aug. 15.

As a whole, the award was a compromise. On each of the five points submitted, regarding the American claims to exclusive jurisdiction over the fur seal beyond the three-mile limit, the decision was against the United States. America has neither a derivative title to the e. half of Bering Sea, nor any proprietary title to the seals. All the technical points by which the United States hoped to amend and extend the body of international law were overruled; and the tribunal refused to create a precedent of unknown bearing, even for the commendable object of protecting the seals. However, this latter object was provided for by the establishment of liberal protective regulations morally binding on both nations; and, inasmuch as the preservation of the seal herds was the ultimate motive with which the United States entered into the arbitration, Americans generally are disposed to regard the award as a practical, if not a theoretical, vindication of their claims. It is significant that on the principal issues the decision of the arbitrators was almost unanimous. On the question of the American claims to a derivative title and exclusive jurisdiction in Bering Sea, covered by the first four points submitted, Senator Morgan's was the only dissenting voice. On the fifth point, Mr. Justice Harlan sided with Mr. Morgan. On this point of alleged proprietary right in the seals, even beyond the ordinary three-mile limit, the United States had laid greatest stress in later stages of the controversy; but the foreign arbitrators unanimously decided that this claim had no foundation in law.

That the tribunal, however, was deeply impressed with the arguments for the alleged property rights of the United

States, and with the evident inhumanity and destructiveness of the common practice of pelagic sealing, was evident in the provisions made for the protection of the seal. They prohibit the taking of seals within a zone of 60 m. around the Pribyloff Islands; they establish a close season, May 1—July 31, in the waters of the n. Pacific Ocean and Bering Sea, and they provide that none but sailing vessels may engage in seal-taking in the open season, prohibiting the use of nets, firearms, or explosives, except shotguns used outside Bering Sea in the open season. It was made the duty of the United States and England to take measures to enforce these provisions. Each party is required to furnish a sufficient patrol to prevent vessels of its own nationality from violating them. On these protective regulations, the arbitrators differed more widely than on the legal aspects of the case. Sir John Thompson, the Canadian representative on the tribunal, joined with the two U. S. arbitrators in dissenting, but presumably on different grounds from the latter. The arbitrators themselves recognized that the proposed regulations were tentative in character; and they made provisions for future modifications by requiring that they be submitted to reconsideration every five years. That even the fate of the sealing industry itself, notwithstanding the protective regulations established, was possibly in doubt, was evident from the suggestions which the arbitrators added to their formal award. The international regulations being limited to the international domain, the high seas only, should be supplemented by other rules applicable within the territorial waters of the two powers, and agreed upon by them. In the interests of commerce and humanity, it might even be advisable to prohibit sealing absolutely, either on land or sea, subject to any exceptions agreed on, for at least one year, and to repeat this measure if requisite.

The question of property rights having been settled adversely to the U. S. contentions, it was thereby settled that damages must be paid by the United States to compensate the sealers kept out of Bering Sea through the operations of the *modus vivendi*, or whose vessels were illegally seized prior to an agreement for a close season; also damages for illegal seizure of vessels prior to the adoption of a *modus vivendi:* the latter question remains as a subject for future diplomatic action.

The Paris arbitration is a noble exponent of the heightened moral tone in international relations which marks a true advance in civilization.

BER'ING STRAIT, or BEHRING'S STRAIT: separating Asia from America, and connecting the Pacific with the Arctic Ocean. The proof that the two continents were not connected was given by the voyage of a Cossack named Deschnev, who, 1648, sailed from a harbor in Siberia, in the Polar Ocean, into the Sea of Kamtchatka. But the whole voyage was long regarded by Europeans as a fable, until Bering's (q.v.) expedition 1728. The strait was explored and accurately defined by Cook 1778. The narrowest part is near 66° n. lat., between East Cape in Asia, and

Cape Prince of Wales in America. The distance between the two capes, in a direction from n.w. to s.e. is about 36 m.; about midway are three uninhabited islands. The greatest depth, about 30 fathoms, is toward the middle, and the water is shallower toward the American coast than the Asiatic.

BERJA, *bĕr'hâ:* town of Spain, province of Andalusia, at the foot of the Sierra de Gador, about 22 m. w. of Almeria. It has manufactures of linen fabrics, hats, hardware, and leather, and a trade in wine and oil. The inhabitants are engaged largely in mining lead, which is plentiful in the Sierra de Gador. Agriculture is prosecuted to some extent. Pop. about 16,000.

BERKELEY, *bėrk'lē,* town, Alameda co., Cal.; on the e. side of San Francisco Bay, 9 m. n.e. of San Francisco, 5 m. from Oakland; on the Southern Pacific railroad. Its principal industries are planing-mills and screen manufactories. It has weekly newspapers, one of which is published by and for deaf-mutes. B. is important as a literary centre, being the seat of the University of California, State Agricultural Coll., and California Institution for the Deaf, Dumb, and Blind. It has also excellent public schools and a public library. It is favorably situated on elevated ground, and is well lighted and abundantly supplied with water. Pop. (1910) 40,434.

BERKELEY, *bėrk'lē:* small town of Gloucestershire, Eng., 15 m. s.w. of the town of Gloucester, on the small river Avon, a mile and a half e. of its junction with the estuary of the Severn. The town lies in the fine vale of B., which is 25 m. long and four broad, between the Severn on the w. and beech-covered hills on the e. This vale consists of rich meadow pasture-land, on a deep, fat loam, and is celebrated for its dairies and cheese. The latter is the far-famed 'Double Gloucester,' of which each cow yields abt. 340 lb. a year. Near B. is the entrance to the B. and Gloucester canal, navigable for vessels of 600 tons. There is some trade in timber and malt. B. castle, a battlemented building on an eminence s.e. of the town, was granted about 1150, by Henry II. to Robert Fitzhardinge, with power to enlarge and strengthen it. Here Edward II., was murdered 1327 by Maltravers and Gourney. In the civil wars of Charles I., the castle held out for the king, but was taken after a nine days' siege by the Parliamentarians. In the castle is preserved the cabin-furniture of Drake the navigator. Dr. Jenner, the discoverer of vaccination was a native of B. and is buried in the parish church of St. Mary here. Pop. of borough under 1,000; of parish abt. 5,000.

BERKELEY, *bėrk'le,* GEORGE: Bishop of Cloyne: 1685, March 12—1753, Jan. 14; b. Kilcrin, near Thomastown, county of Kilkenny, Ireland; eldest son of William B., a cadet of the family of the Earl of Berkeley. He studied at the school of Kilcrin, at which Swift also received his early education; and in his 15th year he followed his great

countryman to Trinity College, Dublin, where, 1707, he obtained a fellowship. At college he enjoyed the society of Swift, who patronized him, as he did almost everybody, and who subsequently had a great deal to do in shaping his fortunes.

Berkeley's career as an author began, 1707, by the publication of his *Arithmetica absque Algebrâ aut Euclide Demonstrata.* This was followed, 1709, by the celebrated *Essay towards a New Theory of Vision,* in which he shows that visual consciousness is ultimately a system of arbitrary signs, symbolizing for us certain actual or possible tactual experience. The association between the visible and invisible signs has grown up in our minds through habit, but depends on the constant conjunction of the two by the will of the universal mind. In 1733, Berkeley produced a pamphlet in vindication of it—viz., *The Theory of Vision or Visual Language, showing the Universal Presence and Providence of the Deity Vindicated and Explained.* Here true substance is shown to be conscious spirit, and true causality the free activity of such a spirit, matter apart from a conscious mind being an impossible and unreal conception. His *Treatise concerning the Principles of Human Knowledge* appeared so early as 1710. Its object was to undermine the materialism of the age, by denying, on received principles of philosophy, the reality of an external, material world. Bodies, he said, are just what they are experienced to be, their *esse* is *percipi.* The idea of any substance back of what we see, hear, smell, touch or taste, a substance which we can never directly perceive (Locke's assumption) is pure abstraction, and abstract ideas do not exist. Nature is thus nothing more than conscious experience, but its constancy is the sign and proof of the divine intelligence. Berkeley's system is a monument at once of subtlety of mind and of the devotion of the intellectual powers to the cause of religion. The object was, as the full title of the book itself sets forth, to inquire into and remove the causes of skepticism, atheism, and irreligion, but in following out this purpose he prepared the way for a subtler form of skepticism (in Hume's philosophy) than the world had previously known. See PERCEPTION.

In 1713, B. went to reside in London, where, in the same year, he published a defense of his ideal system, *Three Dialogues between Hylas and Philonous.* Shortly after this he was appointed chaplain and secretary of legation under Lord Peterborough, whom he accompanied to Italy. In 1720, he returned to London; thence in 1721 he went to Ireland and, in 1724, became Dean of Derry, with an income of £1,100, and resigned his fellowship.

Berkeley was not a man to settle in the enjoyment of leisure and opulence. The Dean of Derry set to devising schemes of usefulness, fixing at last on one by which his deanery and income were to be exchanged for exile and £100 a year. This was the Bermudas College scheme for training pastors

for the colonies, and missionaries to the American Indians. Swift, failing to induce him to give up the project, made influence with ministers to support it, which they promised to do. Full of hope, B. prepared for his exile; he married, 1728, Aug., Anna Elvert, dau. of Right Hon. John Forster, speaker of the Irish house of commons and soon afterwards sailed for Rhode Island. The support promised by government was never given to him, and, after six years, he returned to England heartbroken with failure, and harassed by creditors. He had barely returned, however, when (1734) he received the bishopric of Cloyne, as a mark of favor from the queen. He was now once more in the enjoyment of leisure for literature. Soon appeared the *Minute Philosopher*, followed by various letters and pamphlets on the state of the country, and in 1749 by *A Word to the Wise*. In 1744, he gave the world his notions of the virtues of Tar-water in a book entitled *Siris*. Tar-water appears to have been in his thoughts as it was in his system—which must have been saturated with it—from this time till his death. His last work was *Farther Thoughts on Tar-water*, published 1752. The fact is, he was hypochondriacal for many years before his death. He died at Oxford, whither he had gone to live with his son, who was studying at Christ Church. A graceful writer, a subtle philosopher, and an active churchman, his whole life was devoted to usefulness, and ennobled by the purity of his aspirations. The best edition of his works is that of Prof. Fraser, 2d. edition 1902.

BERKELEY, George Charles Grantley Fitzhardinge, English writer; b. 1800, Feb. 10; d. Poole, Dorsetshire, 1881, Feb. 23. In 1832–52 he was a member of the British Parliament and for a time he was in the army. His *My Life and Recollections* (1864–6), an extensive work, attracted some attention. Among his further works are: *Berkeley Castle* (1836); *Sandron Hall, or the Days of Queen Anne* (1840); *The English Sportsman on the Western Prairies* (1861); *Anecdotes of the Upper Ten Thousand at Home and Abroad* (1867).

BERKELEY, Sir John, English nobleman, b. 1607; d. 1678 Aug. 28. He was a prominent Royalist during the contest of Charles I. with Parliament. Charles II. granted him, with Sir George Cartaret, a proprietary interest in New Jersey and Carolina.

BERKELEY, Miles Joseph, English botanist: b. Biggin, Derbyshire, 1803; d. Sibbertoft, Leicestershire, 1889, July. Educated at Christ Church, Oxford, he took orders, was curate at Margate (Kent) and Market Harborough (Leicestershire), and subsequently was made vicar of Sibbertoft. He soon became the leading British authority on fungi and plant pathology, and especially well known for his achievements in mycology. About 6,000 species of fungi are credited to him; his most important work was the section on fungi contributed to Hooker's *British Flora* (1836), and, his *Outlines of British Fungology* (1860),

and he assembled a fine herbarium of more than 9,000 species, now at the Kew Gardens, and regarded as one of the most noteworthy in the world. A bibliography may be found in the *Catalogue of Scientific Papers* of the Royal Society. Consult, also, Vol. XLVII. (1890) of the *Proceedings of the Royal Society* for a sketch by Hooker.

BERKELEY, Stanley, English artist. He has constantly exhibited at the Royal Academy in recent years, and is a national gold medallist and a member of the Royal Institute of Painter Etchers. Among his paintings are: *The Victory of Candahar; For God and the King; Prince Rupert at the Battle of Edgehill; Completely Routed; An Australian Bush Fire; Heroes of the Tugela; The Meet; Atbara; Omdurman; The Charge of Scarlett's Three Hundred; Gordons and Greys to the Front; Full Cry; Desperate Odds; Dargai; Cornered at Last; The Death; The Charge of the French Cuirassiers at Waterloo; The Survival of the Fittest; Might is Right; When we Were Pups Together; Gone Away; General Gordon and the Slave Hunters of Darfour;* etc. He has also done much in the way of illustrating books and newspapers.

BERKELEY, Sir William, American colonial governor: b. near London about 1610; d. 1677, July 13. His father and brother were colonial proprietors. Graduating from Oxford 1629, he traveled on the Continent for a year; was appointed a commissioner of Canada 1632, and won a high reputation there. In 1641 he was made governor of Virginia, and arriving in 1642, was for a time very popular. He experimented in the cultivation of rice, cotton, indigo, hemp, flax, and silk, the manufacture of potash and naval stores, and the cutting and export of masts; pleased the Royalist party by expelling the New England Puritans in 1643, and all parties by capturing the Indian chief Opechancanough in 1644, after a series of Indian massacres. Always with an eye to profit, however, he received from the king a monopoly of the ice trade. During the English revolution he adhered to the royal side, and offered an asylum in Virginia to exiled or dissatisfied Royalists; many hundreds availed themselves of this. When Cromwell felt strong enough he sent a fleet (in 1651) to bring him back for punishment; but Berkeley succeeded in making terms with it by mingled 'bluff' and finesse, and was allowed to retire in safety to his plantation, though deprived of his office. When the Restoration began to seem probable, the colonists elected Berkeley as governor to gain favor in such event; Berkeley accepted it provisionally, and Charles II. on accession confirmed it. But in this second term all Berkeley's evil side showed itself, till it ended in the atrocities of 1676. Besides expelling and confiscating the goods of Puritans and Quakers, a measure popular at the time, he frowned on the establishment of schools, and absolutely refused to have a printing-press set up, as making people too censorious of their superiors. He formed a council

of the wealthier planters, and having obtained during the spasm of Restoration loyalty in 1662 an ultra-royalist House of Burgesses, would not issue writs for another election for 14 years, simply adjourning annually the 'Long Assembly,' as it came to be called; and in 1670 abolished universal suffrage, substituting a property qualification, purely as a precaution for the future, as no elections were held for years before and after. These, however, were only means to the end of profiting himself and his friends, and the rapacious crew of civil officers sent over by Charles to quiet their importunities. The heavy taxes and fees imposed on the colony, drove them to desperation, so that as early as 1667 they were ripe for revolt. Besides Berkeley's share in various extortions, he had one monopoly which led directly to the catastrophe, that of the Indian trade, which he gained by underhand means. The colony allowed no trade with the Indians without license; Berkeley therefore licensed a small number of men to trade in furs with them, which secretly included liquor, firearms, and other things, and exacted a third of the profits. It was believed to be this gain which led him to refuse permission to the colonists to protect themselves against the Indians in 1675–6, while hundreds of them were being massacred and tortured and scores of plantations laid waste, and to dissolve force after force assembled to protect them. How Nathaniel Bacon chastised the Indians in spite of him, was proscribed for it, forced into open rebellion, drove Berkeley into retreat and burned his capital, and died at the moment of his victory, is told under 'Bacon's Rebellion.' Berkeley's soul was as full of senile fury as it had been of senile avarice; he slaughtered right and left, hanging a score of victims with such vindictive haste and ruffianly insult that the Assembly remonstrated, and the royal commissioners, who came in January to investigate the condition of the colony, made a report that led the king to remove him. He sailed April 27, his departure celebrated with bonfires and salutes of cannon; and expected to justify himself to the king and return. But Charles kept postponing an interview, and in a few weeks Berkeley died—of chagrin, it was believed.

BERKSHIRE, *bėrk'shėr:* notable co. in w. Mass., forming the entire w. end of the state; length n. to s. about 50 m., width about 25 m.; 1,000 sq. m.; cap. Pittsfield. It is drained by the Deerfield, Housatonic, and other rivers, and its surface is diversified by mountains, hills, and forests. It is intersected by the Boston and Albany, the N. Y., N. H. & H., and other RRs; and the Hoosac tunnel, 5 m. long, through the Hoosac Mountains, is an important engineering work. B. is noted for its picturesque scenery, which has attracted many residents of the large cities, who have adorned it with their beautiful summer homes. The highest point in the state is Greylock, 3,535 feet high. It is a wooded and a farming district, and there are extensive manufactures. Pop. (1890) 81,108; (1900) 95,667.

BERKSHIRE, *bĕrk'sher:* a midland county of England, bounded n. by Gloucester, Oxford, and Bucks; e. by Oxford and Bucks; s.e. by Surrey; s. by Hampshire; w. by Wiltshire; greatest length, 50 m.; average breadth, 15 m.; 712 sq. m. nearly one-half of which is under tillage, one-fourth in pasture, and one-sixteenth in wood. B., which is one of the most beautiful of the English counties, lies in the valley of the Thames, and has an undulating surface, rising in some parts into hills. Older tertiary strata, consisting of the London clay, occupy the east of the county; cretaceous strata, the middle; oolitic, the west. A range of chalk-hills, or downs, connected with the Chilterns on the e. and the Marlborough Downs on the w., crosses the country into Wiltshire, from Reading to Wallingford, attaining at White Horse Hill (so called from the gigantic figure of a horse rudely defined in the chalk—a relic of ancient times) a height of 893 ft. Between this range—the w. part of which is occupied by sheep-walks—and a smaller oolitic one skirting the valley of the Thames, is the Vale of White Horse, the richest part of the county, and drained by the Ock. To the s. of the Downs is the fertile Vale of Kennet, drained by the river of that name, and its feeder, the Lambourn. To the e. is the forest district comprising Windsor Forest, part of Bagshot Heath, etc. The forest consists chiefly of hazel, oak, beech, ash, and alder. The Thames skirts the whole n. border of the county, winding through a course of 100 m., but in a direct line only 52, navigable nearly the whole way. It is the chief river of B., the other rivers being its tributaries; of which the principal are the Kennet, Leddon, and Ock. The Kennet is navigable for 30 m. The climate of B. is very healthful, being mild in the valleys, and bracing on the high lands. The soil varies greatly; in the valleys generally a fertile loam, with a subsoil of chalk, gravel, or clay. The country between the valleys of Kennet and White Horse consists chiefly of sheep-walks; along the Thames, and to the w. of the Ridge Way, or Downs, it is chiefly dairy and pasture land. The chief crops are oats and wheat. 'Double Gloucester' and 'pineapple' cheese are exported in large quantities to London. There is a superabundance of horses. Swine are extensively reared, especially near Faringdon, the breed being one of the best in England. The farms are generally of moderate size. The county is traversed by the Great Western railway and its branch-lines, and by two canals. It contains the municipal boroughs of Wallingford, Abingdon, Newbury, and Maidenhead, and the market-towns of Faringdon, Hungerford, Wantage, Workingham, East Ilsley, and Lambourn. The county has no manufactures of importance. The British and Roman remains are numerous, including Roman roads, and many camps and barrows. Of the old castles, the principal relic is Windsor (q.v.); of monastic establishments, the abbeys of Abingdon and Reading. There are many Norman churches, erected in the 12th and 13th c. Pop. (1891) 238,446; (1901) 255,000.

BERLENGAS, *bĕr-lĕn'gâs:* group of rocky islands in the Atlantic Ocean, off the w. coast of the Portuguese province of Estremadura, 10 m. n.w. of Peniche. The principal one, named Berlenga, is fortified, and has been used as a state-prison.

BERLEPSH, *bĕr'lĕpsh*, EMILIE VON: b. Gotha, Germany, 1757: author, remarkable for the purity of her German. She published *Miscellanies in Prose and Verse* (1787), highly esteemed; and *Caledonia* (1802), after her return from a journey through Scotland.

BERLICHINGEN, *bĕr-lĭk'ĭng-ĕn*, GOETZ or GOTTFRIED VON, 'of the Iron Hand:' d. 1562, July 23: German knight who may, with Ulrich von Hutten, he considered as the last worthy representative of the chivalry of the middle ages, then expiring. He was born at Jaxthausen, Würtemberg, in the ancestral castle of his family, which may be traced back into the 10th c. His education was conducted by his uncle Kuno, with whom he attended the diet of Worms, 1495. He gratified his passion for war at first by taking part in several of the quarrels between German princes, and at the siege of Landshut lost his right hand, which was replaced by one of iron, yet shown at Jaxthausen. When the general peace of the country had been established under Maximilian I., Goetz retired to his castle. But a restless spirit, and the general turbulence of the time, involved him in continual feuds with the neighboring barons and free cities, in which he showed a mixture of lawless daring and chivalrous magnanimity. Having joined Duke Ulrich of Würtemberg against the Swabian league, on the duke's expulsion, he was taken prisoner, and had to pay a ransom of 2,000 florins. In the Peasants' war, 1525, he took part with the insurgents, and was chosen leader of a part of their forces. In his narrative, he ascribes this step to compulsion; more likely it was his own restless and turbulent spirit, and a desire for revenge on his old enemies of the Swabian league. At the unfortunate issue of the war, he at first made his escape, but was afterwards fallen upon unawares by a band of leaguers, who extorted an oath that he would appear before the league when summoned. Accordingly he had to appear at Augsburg, where he was kept in arrest for several years, and at last sentenced to perpetual imprisonment in his own castle and, in case of his breaking this condition, to a fine of 20,000 florins. He passed eleven years in this state, and was only pardoned on the dissolution of the league. He afterwards took part in campaigns in Hungary and in France. He wrote an account of his own life, pub. by Pistorius (Nürn. 1731; Bresl. 1813), which furnishes an excellent picture of the social life and manners of the period, and on which Goethe grounded his drama of *Goetz von B.*, translated by Sir Walter Scott.

BERLICHINGEN, JOSEPH FRIEDRICH ANTON, Count VON: 1759–1832; b. Tyrnau: Hungarian officer and author; served in the Austrian army against the Turks in the

campaigns of 1788 and 1789. In 1790, he abandoned the military career, established himself in the midst of his vast domains, which he preserved from the French invasion, and, at the period of mediatization, he saw the greater part of his lands pass under the sovereignty of the king of Würtemberg, who appointed him member of the cabinet council, count, etc. After 1818, B. withdrew from all concern in public affairs, busying himself in translating into Latin verse Goethe's *Hermann and Dorothea* (Tubingen, 1825).

BERLIER, *ber-le-ā'*, Théophile: 1761–1840; b. Dijon, France: jurist and statesman. Elected member of the Convention (1792–95) by the dept. of Côte-d'Or, he voted for the death of Louis XVI., became a member of the committee of public safety, and after the fall of Robespierre, proposed the suppression of the revolutionary tribunal. He was re-elected to the Council of Five Hundred, became member of the cabinet council, was active in the compilation of the civil code, and received the title of count of the empire. Being secretary of the provisional government in 1815, he was banished soon afterwards as a regicide, and retired to Brussels until the revolution of 1830, when he returned to France. During his exile he applied himself to the study of history, and published his *Historical Abstract of Ancient Gaul before Cæsar* (1822), and *War of the Gauls* (1825).

BERLIN, *bėr-lĭn:* city, cap. of Green Lake co., Wis.; 96 m. from Milwaukee; on Fox river, and on the Chicago, Milwaukee and St. Paul railroad; and connected with Green Bay by steamboat. It is in a good dairy district, and has a granite quarry, flouring mills, and boot and shoe and other factories. B. has several daily, weekly, and monthly periodicals, a high school, and national banks. Pop. (1910) 4,636.

BERLIN, n. *bėr-lĭn'* or *bėr'lĭn:* a kind of carriage first made in Berlin: Adj. denoting a kind of variously colored worsted for fancy-work.

BERLIN, *bėr'lĭn:* cap. of Prussia, and seat of the imperial govt. of Germany, one of the finest and most important cities of Europe; on the river Spree, lat. 52° 30′ n., long. 13° 24′ e. The city is built upon a flat sandy plain, which, though cultivated, is far from fertile. The Spree, at this place about 200 ft. wide, with a current so sluggish as scarcely to be perceptible, divides the city into two nearly equal parts, and communicates with the Oder and the Baltic by canals. A more unlikely site, in some respects, could hardly have been selected for a city, as from its flatness, and the sandy character of the soil, much inconvenience results to the inhabitants: in summer, the heat reflected from the sand is very intense, and clouds of dust rise continually; while in winter the cold is equally great. There being little or no declivity, water stagnates in the streets, producing ill effects. In the Friedrichstrasse, about 2 m. long, there is not a foot of descent

BERLIN.

1. Schlossbrücke with Lust Garten.
2. Palace of Emperor William I.

from one end to the other. Notwithstanding these natural disadvantages the advance of the city, especially in late years, has been extraordinary. In 1861, it covered 14,000 acres; in 1900 its area was 25,000 acres. Although, as far back as the 13th c., the central part of the present city was inhabited, B. was long little more than a fishing-village; it was not till the great elector, Frederick-William (1640–88), had united the separate duchies of which Prussia is now formed, that B. became of consequence as the most central town, and the capital of a large state. His successor, Frederick I., first king of Prussia, imitated his predecessor in enlarging and beautifying the capital; and at the close of his reign, in the end of the 17th c., the population numbered about 50,000. In the next century, it received accessions of French and Bohemian colonists, driven into exile by religious persecution. Every inducement was then held out to bring foreigners to settle in the rising city. Under Frederick the Great, B. continued to prosper. After his death, the inhabitants numbered 145,000. After the peace of 1815, B. increased with extraordinary rapidity, and, being the seat of government a focus of the arts and sciences and a great centre of commercial enterprise it has gradually risen to a position which entitles it to rank as the metropolis of the German empire.

The centre of the city is now devoted almost exclusively to commerce and round this part, extending considerably beyond the city boundaries, are congregated the residences of the citizens. Small towns and villages are gradually being incorporated with the great city. The houses are built of brick, plastered or stuccoed outside, and they soon acquire a faded appearance. The style of these has very much altered since 1864. Prior to that the greater portion of the houses were of one two or three stories but these are fast giving way to houses of four, five, and more stories, the larger predominating. The increase in the value of house-property has been enormous, and the result is that abt. one-tenth of the people are driven to take up their abode in cellars underground. B. contains many very fine buildings. Of these may be mentioned the Royal Palace, the Emperor's Palace, and that of the crown prince; the Royal Library, with upward of 30,000 MSS.; the museums, the Arsenal, and the Guard-house. Most of those named are situated in the street 'Unter den Linden' (so called from its double avenue of limes), one of the finest and most spacious streets in Europe. The city is further adorned throughout with numerous statues of military heroes, the national monument to Emperor William I. by Begas being the most remarkable. Secondary instruction is represented by the gymnasia and real-gymnasia (without Greek) having courses of nine years, and other secondary schools offering courses of six years; besides royal and municipal secondary schools for girls and communal schools. Beside these there are many special schools (for medicine, mining, military science, architecture, etc.), and many kindergarten.

The new Emperor Frederick Museum, probably the best arranged in the world, contains a superb collection of paintings of the older schools, sculptures, coins and collections of oriental art. The National Gallery possesses over 1,100 paintings of the modern schools. The University established 1810, has a very high reputation. Among the professors who have rendered it famous are the names of Fichte, Hegel, and Schelling. The number of students attending it averages about 8,000. Among the numerous institutions of B. are the Acad. of Sciences, by far the most important of the kind in Germany; the Acad. of Architecture; the naval and engineering colleges, besides many learned societies.

The Old Museum contains antiquarian specimens, collections of coins, the gallery of ancient sculpture. The New Museum contains a very extensive and valuable collection of casts arranged in 12 salons; the Egyptian Museum, a fine collection of engravings numbering upwards of 500,000, etc. Outside the celebrated Brandenburg Gate (erected in imitation of the Propylæa at Athens, 70 ft. high, and 200 ft. wide) extends the Thiergarten, the largest and most important park in the city. To the s.w. of this lies the Zoological Garden, recently considerably extended. Other places of interest worthy of mention are the aquarium, the new cathedral, the exchange, the opera-house, the royal chateau of Monbijou, the Hall of the Imperial Diet, the Monument of Victory, 190 ft. high, and the Avenue of Victory, with its 32 marble statues of Prussian rulers.

The commerce and manufactures of B. have increased so rapidly of late years, that it now ranks among the most important mercantile places of continental Europe. Staple commodities are grain, spirits, and wool. Principal branches of industry are engine-building, iron-casting, and the manufacture of woolen and silk goods, and fancy articles; calico-printing is also largely engaged in. In respect of its publishing trade, B. now holds the second rank among German cities. Pop. about 2,050,000.

BERLIN, Treaty of: arranged by the Congress of Berlin which met June 13th-July 13th, 1878, to settle the questions growing out of the Russo-Turkish war. The former treaty of San Stefano (Mar., 1878) had not been satisfactory to the powers. Prince Bismarck was president of the Congress of B. The principal articles were: The partition of Bulgaria; establishment of independence of Roumania, Servia and Montenegro; the control of Bosnia and Hezegovina transferred to Austria; the restoration of Bessarabia to Russia. By this treaty Russia lost nearly all the fruits of her victory. In 1908, Austria abrogated the treaty by the annexation of Bosnia and Herzegovina, an act which afterward received the sanction of the powers.

BERLIOZ, *bĕr-le-o′*, HECTOR: 1803, Dec. 11—1869, Mar. 9; b. La-Côte-St. André, dept. of Isère, France; son of a physician: fertile musical composer. He studied in Paris, at the Conservatoire de Musique, winning 1828 the second prize and 1830 the first. His works are very numerous: among the most successful are the symphonies of *Harold, Romeo et Juliette,* and the *Symphonie Funèbre et Triomphale,* the requiem for Gen. Damrémont, 1837; the overture to *Carnaval Romain,* and the *Hymne à la France,* performed 1844. In 1839, he was made a chevalier of the Legion of Honor. The peculiarity of his style is his endeavor to make instrumental music the exponent of particular feelings as well as general emotions. As to his success critics differ, some deeming it to lead to incoherence; while others rank B. the chief of the romanticists.

BERMUDA GRASS, *bėr-mū′da* (*Cynodon dactylon*): low, creeping perennial grass, native of Bermuda. It produces short leaves at the base, and sends up slender, nearly leafless culms, having 3–5 slender, diverging spikes at the summit. See CYNODON. B. G. endures extremes of heat and drought, but the tops are killed by frost. It is considered worthless at the n.; but in portions of the s. is valued for pasture, hay, and for preventing embankments, levees, and hillsides from washing. It seldom seeds in the United States, but is propagated by sowing pieces of the roots in rows or broadcast. It spreads rapidly and is difficult to exterminate.

BERMUDAS, *Ber-mū′daz,* or SOMERS'S ISLES, *sŭm′erz:* names respectively from Juan Bermudez, a Spaniard, who first sighted them from the deck of his caravel *La Garza,* 1515, and from Sir George Somers, an Englishman, whose shipwreck here in 1609 was the immediate occasion of their being colonized from Virginia—itself only four years old—in 1611. This low and lonely archipelago is a mere group of specks, for though it numbers perhaps 400 islets, yet it measures only about 12,000 acres in all, only 4,000 of which are under cultivation; the whole occupying a space of about 20 m. in length by little more than six in breadth. The value of this natural fortress, which can hardly be overrated, arises from its situation. In lat. 32° 20′ n. and long. 64° 50′ w. the B. occupy, commercially and politically, a singularly commanding position. At a distance of 700 m. s.e. of Sandy Hook, N. Y., and 625 m. from Cape Hatteras, N. C., they are nearly equally remote from the n. of Maine and from the s. of Florida; again between the two grand divisions of British America, they form an almost indispensable bond of union; and lastly, they flank, on either side, the two marine highways which respectively lead from the N. Atlantic to the Gulf of Mexico, and from the Gulf of Mexico to the N. Atlantic. The four principal islands are: St. George's, 3½ m. in length; Bermuda, 15; Somerset, 3; and Ireland, 3—the breadth ranging between 2 m. and 1 furlong. The

minor islands of St. David, Cooper, Smith, Burt, Darrell, Port, etc., form numerous picturesque creeks and bays of great size and depth, such as the Great Sound, Castle Harbor, Harrington Sound, and others. Most of the other members of the group are individually insignificant, many of them indeed without name or inhabitant. From the strange shapes of most of the islands, and the number of spacious lagoons, the communications are almost as necessarily by water as those of Venice. This archipelago is the most northerly point on the globe where the living zoophyte still piles up its sub-marine architecture. The climate may be said to complete the paradise, resembling that of Persia, with the peculiar addition of a constant sea-breeze. Between Dec. and March, the thermometer ranges from 60° to 66°; in June, from 83° to 86°; and between Apr. and Sep. from 75° to 79°. As the dewpoint ranges high, the air is moist at all seasons. Bermuda is now one of the principal winter florist resort for Canadians and Americans who dwell on the Atantic seaboard. Of the cultivated grounds, the main crops are potatoes, onions, and other garden-vegetables, lily-bulbs, arrow-root, maize, etc. Besides containing the largest floating dry-dock in the North Atlantic, Bermuda is useful as a station for those British vessels of war which are charged with the care of the West Indies on the one side, and the n. provinces on the other. Bermuda was formerly an important depot of convicts, but since 1862 it has ceased to be so. During the Boer War several of the islands in the great sound were used as detention camps for prisoners of war. Between Bermuda and New York there is communication by several lines of mail steamers; a similar service is maintained between Bermuda and Halifax, Nova Scotia. The food supply is obtained chiefly from the United States and Canada, where most of the export produce of Bermuda is sent. In 1904 onions to the value of $370,810, potatoes $172,895, lily bulbs $44,880, were exported, but there has been a decline in the onion industry in recent years. The revenue in 1904 was $317,285; the public debt, $232,500. The fisheries are of value. Although vegetation is so luxuriant, yet grain, flour, rice and live-stock are imported from the United States. In the B., emancipation has been decidedly beneficial, though here, as in Antigua, it was carried at once into full effect without the intermediate stage of apprenticeship. The group is under the authority of a Governor and Executive Council of 6 members appointed by the Crown, and a legislative council of 9 members also appointed by the Crown, and a representative house of assembly of 36. More than one-half of the population belong to the Church of England. Other denominations represented are Presbyterian, Wesleyan and Rom. Catholic. Pop. (1909) 19,289, of which 6,718 are whites.

BERN, or Berne, *bĕrn:* the most populous, and next to the Grisons, the most extensive canton of Switzerland; nearly 2,650 sq. m.; between lat. 46° 20′ and 47° 30′ n.,

and long. 6° 50′ and 8° 27′ e. It has France on the n.; on the other three sides it is surrounded by its sister cantons. B. is one of the three governing cantons of the Swiss Confederation (since 1849 it has been the permanent seat of the Swiss government), and had, 1900, a population of 589,433,—about one-fifth of the total inhabitants of Switzerland. Of these, 67,000 were Rom. Cath., the rest Protestant. The roads are good, the lakes and the river Aar are well supplied with steam-packets. The educational condition of the canton is good. B. entered the Swiss Confederation, in which it now holds the second rank, in 1352. In the 15th and 16th c. it added to its possession Aargau and Vaud, which it lost during the wars of the first Napoleon; but it received in return Bienne and its territory, and the greatest part of the bishopric of Basel. The present constitution of the canton, dating from 1846, is one of representative democracy.

BERN: cap. of the above canton; lat. 46° 57′ n., long. 7° 26′ e.; on a lofty sandstone promontory, more than 1,700 ft. above the sea, formed by the winding Aar, which surrounds it on three sides, and is crossed by three bridges, one built 1841–44, the second 1883, the third a railway bridge. The fourth side was defended by fortifications, but these have been converted into public walks from which a magnificent prospect is enjoyed. The principal public buildings are a Gothic cathedral, founded 1421, with some interesting tablets and relics; a new and magnificent structure, designed to accommodate the Swiss diet and administration; the mint, the hospital, and the university. B. has an interesting museum, and a valuable town library. The manufactures consist of woolens, cottons, silks, machinery, chocolate, etc. It has a considerable trade in the produce of the surrounding district. B. was founded by Berthold V., 1191, who is said to have given it the name B. because he had killed a bear on the spot. A charter from Frederick II., 1218, made it a free imperial city, and it gradually extended its possessions until it became an independent state; and, between 1288 and 1339, successfully resisted the attacks of Rudolph of Hapsburg, Albert his son, and Louis of Bavaria. In B. was held, 1528, the Conference (or Disputation) of Bern, establishing the Reformation in B. It is sometimes considered the turning-point in favor of the Reformation: see D'Aubigne's *History of the Reformation*. When the French entered B., 1798, they found 30,000,000 francs in the treasury. The corporate property of B. is very large—sufficient to defray all municipal expenses, provide the whole of the citizens with fuel gratis, and besides, to leave a surplus for annual distribution among them. B. is the residence of foreign ministers; and, since 1849, the permanent seat of the Swiss government and diet. Haller, the distinguished physiologist, was born at Bern. On account of the traditionary derivation of its name (Old Swabian *bern*, a bear), bears have for several centuries been maintained in B. at the expense of the community. The

French, when they captured B., 1798, took possession of the bears, and sent them to the Jardin des Plantes, Paris; but the Bernese have since secured other specimens of their favorite animals, which are one of the 'sights' of the city. Pop. (1901) 64,864.;

BERNADOTTE, *bėr-nā-dot':* see CHARLES XIV.

BERNALDA, *běr-nâl'dâ:* town of s. Italy, province of Potenza, 32 m. w. by s. from Saranto. Pop. abt. 7,000.

BERNARD, CLAUDE, *věr-năr':* 1813, July. 12—1878, Feb. 10; b. Saint-Julien, near Villefranche, dept. of the Rhone: physiologist. He studied medicine at Paris; was admitted, 1839, as a pensioner in one of the hospitals; and, 1841, became Magendie's assistant at the College of France. He graduated, 1843, Doctor of Medicine, and ten years later, Doctor in Science; and was appointed in 1854, Feb., to the chair of general physiology in connection with the Faculty of Sciences in Paris. The same year, he was chosen member of the Acad. of Sciences; and, 1855, he succeeded Magendie as prof. of experimental physiology in the College of France. B.'s first researches were devoted to the physiological action of the various secretions of the alimentary canal. His Memoir, published 1844, in the *Gazette Médicale*, treats of the mechanism by which the gastric juice is secreted, and also of the modifications which alimentary substances undergo from that liquid. To the *Comptes Rendus* of the Biological Soc. he also contributed papers on the Saliva, on the Intestinal Juice, on the Influence of the Different Pairs of Nerves on the Digestive Apparatus, and on the Respiratory and Circulatory Systems. His first really original paper, however, was that on the Function of the Pancreas, in which he demonstrated that that viscus is the true agent of the digestion of fatty bodies. This essay obtained, 1849, the grand prize in experimental physiology, and was printed in the *Comptes Rendus* of the Acad. of Sciences, 1856. In 1849, appeared his first researches on the Glycogenic Function of the Liver, establishing the doctrine that the blood which enters the liver does not contain sugar; while blood which leaves that organ, and goes to the heart by the hepatic veins, is charged with it. He also showed the influence of the nervous system on this function, and produced artificial diabetes by division of the pneumogastric. For this discovery, which was keenly criticised, but is now regarded as sound, he obtained, 1851, the grand prize in experimental physiology. In 1852, he laid before the Institute his Experimental Researches on the great Sympathetic System, and on the Influence exerted by Division of this Nerve on the Animal Heat. This paper procured him, for the third time, the prize of experimental physiology, 1853. After 1854, when he succeeded Roux as member of the Institute, he continued his researches on the glycogenic function of the liver, and published his courses of lectures at the College of France, on *Experimental Physiology in its Application to Medicine* (1855–1856); on *The Effects of Toxic and Medicated Substances* (1857); on *The Physiology and Pathology of the Nervous System* (1858);

on *The Physiological Properties and the Pathological Alterations of the Various Liquids of the Organism* (1859); on *Nutrition and Development* (1860); and his *Introduction to the Study of Experimental Medicine* (1865). In 1862 he became officer of the Legion of Honor; in 1867, commander; and in 1869 he was made a member of the Academy.

BER'NARD, GREAT SAINT (*Mons Jovis*): famous mountain-pass in the Pennine Alps, between Piedmont and the Valais. The pass attains an elevation of more than 8,000 ft. above the sea-level; and almost on its very crest, on the edge of a small lake, which is frozen over nine months out of the twelve, stands the *hospice*, founded, 962, by Bernard de Meuthon, a Savoyard nobleman, for the benefit of pilgrims to Rome, and now largely used by travellers across the Alps. The hospice, next to the Etna Observatory, the highest habitation in Europe, is occupied by ten or twelve St. Augustine monks, who, with their noble dogs of Saint Bernard breed, have rescued many hundred travellers from death by exposure to cold, or burial in the snow.

LITTLE SAINT BERNARD, which forms part of the chain of the Graian Alps, is the most convenient of the Alpine passes, and is supposed to have been the one by which Hannibal led his forces into Italy. It also possesses a hospice, 7,192 ft. above the sea.

BERNARD OF CLUNY, *ber'nard ŏv klü-nē':* abt. 1122–1156: monk under Peter the Venerable, Abbot of Cluny or Clungy. He wrote an extended Latin poem, *Contempt of the World*, ranked among the best productions of mediæval church literature. A few of our modern hymns, such as *Brief Life is Here our Portion*, *Jerusalem the Golden*, etc., are mere extracts translated from Bernard's poems.

BERNARD, SAINT: (1091–1153) theologian and doctor of the church, the dominant spirit of his age, was a native of Burgundy. To his mother Bernard, the third among six sons, owed an early inclination to the religious life; the surroundings of his home, and subsequent teaching increased this tendency. In accordance with the conditions of the 12th c., two courses only were open to the sons of noblemen,—the military life of feudalism or the life of the monk. Bernard, choosing the latter, sought a convent of rigid rule. Citeaux, a poor and needy monastery, was selected, and thither Bernard, in ascetic zeal, led 30 followers, among whom were four of his brothers. With a hope of preventing a re-inforcement of the band, 'mothers hid their sons, wives their husbands, companions their friends;' so soon did Bernard win a reputation of resistless persuasive powers. In short time, the monastery was overflowing, and Bernard, a young monk of 25 years, was chosen to lead out a colony. A savage barren valley in Champagne, when cleared, became the site of a new home, named appropriately *Clairvaux;* from which as a centre, Bernard, the abbot, was soon to direct the establishment of hundreds of Cistercian convents; whence he

was to rebuke or encourage princes, to lead attacks against heresy, to make and unmake popes. But while he became the counsellor of rulers, Bernard was, first of all, a monk. His untiring activity in the spread of his own order and in the reform of others, brought about results almost incredible. Before his death, over 2,000 establishments had been founded in all parts of Europe. So numerous were they in Portugal, that the country was said to be a fief to the Abbey of Clairvaux. Bernard's influence in the church was so permeating that after 1130 'the life of St. Bernard is the history of the Western Church' (see Milman's *History of Latin Christianity*, Bk. VIII, C. IV). At this period, occurred the schism caused by the election of the rival popes. Bernard was summoned from his retreat by the King of France to give his judgment as to the rightful successor. His decision in favor of Innocent II. (q.v.) was accepted by the rulers of England, France, the Empire, Spain and Portugal. The contest lasted for seven years. In 1137 the anti-pope was brought to the feet of Innocent II., not by force, but by the eloquence of Bernard. In his famous controversy with the rationalistic Abelard (q.v.) and in his vehement attack upon the republican, Arnold of Brescia (q.v.), Bernard at once was the leader and voice of his age. In 1145 a disciple and pupil of Bernard's was chosen pope. He took the name of Eugenius III. From that time the Abbot of Clairvaux was virtually on the papal throne. The last great public act of St. Bernard was the preaching of the second crusade (see CRUSADES). His prophecy of success raised a mighty army against the infidels. The disastrous failure of the undertaking changed the feeling of all Europe toward the man that had largely made the history of his time. St. Bernard's canonization took place in 1174.

St. Bernard is considered one of the great examplars of mysticism. Dante, in the *Paradiso*, receives him as guide to the presence of the Beatific Vision. His literary works in the form of sermons, letters and treatises, are valuable as interpreting his times, and his own character. There is an edition of his works by Mabillon. Neander, Ratisvonne and Morison, have each written a biography. Chapters IV–VII, bk. VIII, in Milman's *Latin Christianity*, give St. Bernard's connection with the events and ideas of his times.

BERNARD DOG, GREAT SAINT: a race or variety of dog deriving its name from the hospice of St. Bernard. The Saint B. dog is remarkable for great size, strength, sagacity, noble appearance, and majestic gait. There are two sub-varieties having the same general characteristics save as to the coat—the long-haired dogs resembling the finest kinds of Newfoundland, and the short-haired ones being much like a mastiff. Tawny and brindle are the usual colors; but some dogs have a skin more or less clouded with gray, liver-color, and black. Usually only six dogs are kept at the hospice, four being used daily. Avalanches or other accidents have frequently reduced the

number. The place of those which die or are lost, has been supplied by others from the valleys around, descendants of dogs originally sent from the hospice, so that the breed has been kept pure or nearly so till the present time. Some of the handsomest dogs of both sub-varieties are seen in other countries, where they are much esteemed as pets and favorites. The origin of the breed is debatable; but the stock is generally said to have sprung from a Danish dog, left at the hospice by a traveller, and the native Alpine shepherd's dog.

The custom of the monks is to send out two of their number, accompanied by two servants (marronniers) daily, when the weather at all permits, for some distance down the pass on the Swiss side, and a similar party down the Italian side, to succor fatigued or worn-out travellers. The dogs are specially valuable for assisting the monks in keeping to the line of road, and in finding their way back. The monks may carry with them stimulants and clothing in case of emergency; but it is, to say the least, very unusual to burden the dogs by making them the bearers. And though the dogs have, according to the monks, sometimes gone out unaccompanied by men, it is almost needless to say that the tale of dogs regularly sallying forth two by two, without human attendants, and bearing kegs of spirits and clothing, shows plain marks of poetic license. Sometimes both dogs and men have been overwhelmed and lost in the snow; the lives of both are shortened by habitual exposure, which usually causes at last severe rheumatism. In the museum at Berne is the stuffed skin of the famous dog Barri, which helped in saving more than 20 human lives.

BERNARDIN, *bėr-nâr-dăng'*, SAINT, of Sienna: 1380—1444; b. Massa-Carrara, of a distinguished family: famous by his rigid restoration of the primitive rule among the degenerate order of the Franciscans, of which he became a member 1404, after having already, 1397, joined the brotherhood of the *Disciplinati Mariæ*. In 1438, he was appointed vicar-gen. of his order for Italy. B. was unwearied and devoted in his activity during the great Italian plague of 1400, both as an impressive preacher and an attendant upon the sick and dying. He founded the *Fratres de Observantia*, a branch of the Franciscan order, which already during his day numbered more than 300 monasteries in Italy. B. was canonized by Pope Nicholas V. 1450, his festival being May 20.

BERNARDIN DE SAINT PIERRE: see SAINT PIERRE.

BERNARDINE, n. *bėr'nar-dīn*, or *-dĭn:* one of the Cistercian monks, a branch of the old Benedictines, from St. Bernard, considered its second founder: ADJ. pertaining to the monks of the order of St. Bernard. See CISTERCIANS.

BERNAUER, *ber'now-ėr*, AGNES: d. 1435, Oct. 12: the beautiful daughter of a poor citizen of Augsburg, whose sad story is like a romance. Duke Albrecht of Bavaria,

only son of the reigning Duke Ernst, saw the maiden at a tournament at Augsburg, given in his honor by the nobility, and fell violently in love with her. Albrecht was young, handsome, and manly, and Agnes was not insensible to his attractions and his rank; but she was too pure to listen to his overtures till he promised to marry her. They were then secretly united, and Albrecht carried his young wife to the castle of Vohburg, which he inherited from his mother. Here they enjoyed their matrimonial happiness undisturbed, till Albrecht's father formed the plan of marrying his son with Anna, daughter of Erich, Duke of Brunswick. The determined opposition which he met soon made him aware of his son's attachment to the Augsburger's daughter, and of the strength of his passion for her; and he resolved on energetic measures to break it off. He accordingly contrived that, at a tournament at Regensburg, the lists were shut against his son, as one that, against the rules of chivalry, was living with a woman in licentiousness. Albrecht swore that Agnes was his wife, but in vain; he was still excluded. He now caused Agnes to be openly honored as Duchess of Bavaria, gave her a numerous retinue of servants as a princess, and the castle of Straubing for a residence. She, full of sad forebodings of a dark fate, erected in the Carmelite convent of the place an oratory and a tomb. As long as Duke William, Albrecht's uncle, lived, who was greatly attached to his nephew, nothing further was attempted against the happiness of the lovers. But after his brother's death, Duke Ernst, in the absence of Albrecht, ordered Agnes to be arrested and executed without delay. Accused of sorcery, by which she was alleged to have bewitched Albrecht, she was carried, bound hand and foot, by the executioners to the bridge of the Danube, and in the presence of the whole people thrown into the river. The current having floated her again to the side, one of the executioners ran with a long pole, and, fastening it in her golden hair, held her under the water till she was drowned. Maddened at this atrocity, Albrecht took up arms against his father, and, in league with Ernst's other enemies, wasted the country. It was in vain that Duke Ernst entreated his son to relent. It was not till the emperor Sigismund, and the other friends of the family, united their exhortations, that Albrecht at last returned to his father's court, where, after a time, he consented to marry Anna of Brunswick. To regain the forfeited regard of his son, Duke Ernst had a chapel erected over the grave of the murdered lady, and Albrecht founded in the year of her death daily masses for her in the Carmelite monastery at Straubing; even after twelve years he renewed the foundation, and had the bones of his 'honored wife' transferred to the tomb provided by herself, and covered with a marble monument. The unhappy loves of Albrecht and Agnes were long the theme of popular song; and the story has been made the subject of at least three tragedies, one by Jul. Körner (Leip. 1821), another by A. Böttger (3d ed. Leip. 1850).

BERNAY, *bĕr-nā':* town of France, dept. of Eure.

pleasantly situated on the right bank of the Charentonne, 26 m. w.n.w. of Evreux. Woolen, linen, and cotton manufactures are actively carried on, also paper-making, bleaching, dyeing, and tanning. There is a considerable trade not only in the products of these manufactures, but in grain, cider, horses, and cattle. B. is the seat of the greatest horse-fair in France, which is held on Wednesday of the fifth week in Lent, and is attended by nearly 50,000 persons, from all parts of France, chiefly to purchase post and diligence horses, for which Normandy has long been celebrated. B. is the seat of a tribunal of commerce. The church of St. Croix has a large and magnificent altar, and marble statues and sculptures: the church of La Conture was formerly celebrated for the cure of persons possessed of evil spirits. The grain-market occupies part of the remains of an interesting old abbey church. B. has a communal college, and a hospital. Pop. abt. 8,000.

BERNBURG, *bėrn'burg* or *bĕrn'bûrg:* town in the German duchy of Anhalt, till 1863 cap. of Anhalt-Bernburg; on the Saale, 23 m. s. of Magdeburg, lat. 51° 47′ n., long. 11° 45′ e. Two parts of B., surrounded by walls, lie on the left bank of the river, and are united by a bridge with the third part on the opposite side, which has a castle, but is not walled. B. is well built, has several literary and charitable institutions, and manufactures of porcelain, paper, and starch. Pop. (1900) 34,431.

BERNESE, n. *bėr-nēz':* an inhabitant or inhabitants of Bern: Adj. pertaining to Bern or to its people.

BERNHARD, *bėrn'hârt,* Duke of Weimar: 1604, Aug. 6—1639, July 8; youngest son of John, 3d duke. On the outbreak of the Thirty Years' War, he took the side of Protestantism. In 1631, when Gustavus Adolphus appeared in Germany, B. supported his cause; but his career was cut short by death, as many believe, from poison administered by his physician.

BERNHARDT, *bėrn-hârt',* Rosine (called Sarah) actress: b. Paris, 1844, Oct. 22. She entered the Paris Conservatoire 1858; appeared publicly first at the Théâtre Français in *Iphigénie* and *Valérie;* withdrew from the stage for a short time; then reappeared at the Gymnase and Porte-Saint-Martin in burlesque parts; and returned to high art at the Odéon. She visited London 1879, 86, 88, and 89, appearing at the Gaiety Theatre in 'La Dame aux Camélias' and 'Fédora,' and at the Lyceum as *La Tosca;* and 1890, Oct. 23, made her first appearance in Sardou's new *Cleopatra* at the Porte-St.-Martin, Paris. She has made successful tours through the United States, Italy, Algeria, and S. America, and received the order of the French Academy.

BERNI, Francesco, called also Berna or Bernia: abt. 1490–1536; b. Campovecchio, Tuscany: Italian poet, from whom comic or jocose poetry has the name of *Versi Berneschi.* He first entered the service of Cardinal Dovizio da Bibbiena, and was afterwards for several years sec. to

Ghiberti, chancellor to Clement VII., and Bp. of Verona. About 1533, he betook himself to Florence, where he was made a canon, and lived in favor with the two Medici, Duke Alessandro, and Cardinal Ippolito, till his death. His *Opere Burlesche* (2 vols., Flor. 1548; Lond. 1721) are to be found in the *Classici Italiani* (Mil. 1806). His recast or rifacimento of Boiardo's *Orlando Innamorato* was received with such favor that it was thrice reprinted, 1541–45. A critical edition was published at Florence, 1827. Berni's version is still read in Italy (and justly so) in preference to the original.—COUNT FRANCESCO BERNI, 1610–93, dramatic and lyric poet, is a different person.

BERNICE: see BERENICE.

BERNICLE, n. *bĕr'nĭ-kl:* see BARNACLE.

BERNIER, *bĕr-ne-ā'*, FRANÇOIS: b. Angers, France; d. Paris, 1688, Sept. 22: physician and traveller. Having taken his degree of Doctor at Montpellier, he departed for the East about 1654, and visited Syria, Egypt, Arabia, and India, in the last of which countries he resided twelve years in the capacity of physician to Aurungzebe. On his return to France, he published an account of his travels in India in 1670–71. The work is delightful in style, accurate in the delineation of manners and customs, and in the descriptions of places, and clear in the exposition of the causes of those political events that carried Aurungzebe to the throne. He visited England in 1685. The titles of his chief works are as follows: *Voyages de M. Bernier contenant la Description des États du Grand Mogol, de l'Indoustan, du Royaume de Cachemire*, etc.; *Mémoire sur le Quiétisme des Indes; Abrégé de la Philosophie de Gassendi; Sentiment de M. Descartes.*

BERNINA, *bĕr-nē'nâ:* mountain of the Rhætian Alps, upward of 13,000 ft. high, in the Swiss canton of Grisons, with a remarkable and extensive glacier, Morteratsch, The B. Pass, with an elevation of 7,695 ft., over which a carriage-road has been made, unites the valleys of the Engadine and Bregaglia on the n. with the Valteline on the s., but is dangerous an account of avalanches.

BERNINI, *bĕr-nē'nē*, GIOVANNI LORENZO: 1598–1680, Nov. 28; b. Naples: Italian sculptor and architect. In his eighteenth year he finished his admired group of Apollo and Daphne, which gave promise of greater excellence than was afterwards reached. Pope Urban VIII. employed B. to produce designs for the embellishment of the Basilica of St. Peter at Rome. The bronze *baldacchino*, or canopy, covering the high-altar of that edifice, the palace Barberini, the front of the College de Propaganda Fide, the church of Sant' Andrea à Monte Cavallo, and numerous ornaments in St. Peter's, are by B. His greatest work in architecture is the colossal colonnade of St. Peter's. In 1665, B. accepted the flattering invitation of Louis XIV., and travelled to Paris with a numerous retinue and great pomp. In Paris, he resided above eight months; but not wishing to interfere with the designs of Claude Perrault for the Louvre, he confined himself entirely to sculpture

His visit, however, proved highly remunerative, and he returned to Rome richly laden with gifts, leaving to his children an estate of abt. $500,000. Besides his works in sculpture, B. left numerous paintings. No artist, perhaps, was ever so much admired and rewarded during his lifetime as B.; but time has subtracted from his fame.

BERNOUILLI, *bĕr-nô'ye:* name of a family that became famous through Europe in various branches of mathematical and physical science. The family originally resided in Antwerp, whence, 1583, its attachment to the reformed religion forced it to seek an asylum in Frankfort. Afterward the Bernouillis settled in Basel. Eight of them became highly distinguished; for the three most celebrated, see BERNOUILLI, JAMES; JOHN; DANIEL.

BERNOUILLI, DANIEL: 1700, Feb. 9—1782, Mar. 17; b. Gröningen, d. Basel; son of John. He studied medicine as well as mathematics. The family reputation early helped him to the professorship of mathematics at St. Petersburg, which he held for several years, retiring ultimately to Basel, much against the will of the czar. At Basel, he occupied in succession the chairs of anatomy and botany, and of experimental and speculative philosophy. He published various works, 1730–56, of which the chief are concerned with pneumatical and hydrodynamical subjects.

BERNOUILLI, JAMES: 1654, Dec. 25—1705, Aug. 16; b. Basel. He devoted his life to the study of mathematics. He became prof. of mathematics in the Univ. of Basel, succeeding in that chair the distinguished Megerlin. Among his first works were *A Method of Teaching Mathematics to the Blind*, and *Universal Tables on Dialling*. These were followed by *Conamen Novi Systematis Cometarum*, an essay on comets, suggested by the appearance of the comet of 1680; and an essay *De Gravitate Ætheris*. He published a variety of memoirs on scientific subjects. *De Arte Conjectandi* was a posthumous work concerning the extension of the doctrine of probabilities to moral, political and economical subjects. His memoirs are in the *Journal des Savans* and *Acta Eruditorum;* his collected works were pub. in 2 vols. 4to, Geneva 1744. Among his triumphs are to be recorded his solution of Leibnitz's problem of the isochronous curve. his determination of the catenary, an investigation of the properties of isoperimetrical figures. At his request, a logarithmic spiral was engraved on his tomb, with the motto, *Eâdem mutatâ resurgo*.

BERNOUILLI, JOHN: 1667, July 27—1748, Jan. 1; bro. of James; b. Basel. He and James were the first two foreigners honored by being elected associates of the Acad. of Sciences at Paris and members of the Acad. of Berlin. John was a chemist as well as mathematician. In 1694 he became a doctor of medicine and soon afterwards prof. of mathematics at Gröningen whence he removed to succeed his brother James in the Univ. of

Basel. His forte was pure mathematics, in which he had no superior in Europe in his day. Among his achievements are the determination of the 'line of swiftest descent,' and the invention of the 'exponential calculus.' His collected works were published at Geneva, 4 vols. 4to, 1742; and his correspondence with Leibnitz, 2 vols., 1745.

BERNOUSE, n. *bėr'nôz:* another, but incorrect, spelling of BURNOOSE.

BERNSTEIN, *bern'stīn,* GEORGE HEINRICH: 1787, Jan. 12—1860, Apr. 5; b. Kospeda, near Jena, where his father was pastor: distinguished orientalist. In 1806, he entered the Univ. of Jena, where he studied theology, philosophy, and eastern languages. In 1812, he was appointed extraordinary prof. of oriental literature in Berlin, and in 1821 regular prof. In 1843, he was appointed to Breslau. Besides a number of lesser treatises, and of contributions to scientific and critical journals, he established his reputation as an oriental scholar by the publication of an Arabic poem of Szafieddin of Hilla (Leip. 1816). But his greatest achievements were in Syriac literature, on which he published several pamphlets, expository, and critical, 1837–47, and a lexicon to Kirsch's *Chrestomathia Syriaca* (new edition, 2 vols., Leip. 1832–36).

BERÖE, *bĕr'ō-ē:* genus of the class *Ctenophora* (comb-bearers), which with the other and lower classes Actinozoa and Hydrozoa, forms sub-kingdom *Cœlenterata* (see ZOOLOGY). It belongs to the ord. *Eurystomeæ,* and family Beroïdæ, characterized by a nearly globular or oval body, of a delicate jelly-like substance, with an alimentary canal passing through its axis, which is vertical as the B. floats, the body strengthened by bands of somewhat firmer texture, 'which run like meridian lines from pole to pole.' These bands are covered with rows of large cilia, the motion of which is extremely rapid, by means of which it swims with rapidity, and easily changes its course. The motion of the cilia causes a beautiful iridescence: the animals also are phosphorescent by night. *B.* (or *Cydippe*) *pileus* (figured for comparison in article ACALEPHÆ) is a little creature, very abundant in the sea on many parts of the British coasts. It is provided with two very long and slender tentacula, which proceed from the sides of the body, and are covered with a great number of still finer filaments. These organs are probably employed for seizing food. This, and other kinds of B., form a great part of the food of whales.

BEROSUS, *be-rō'sŭs:* prob. abt. B.C. 260: an educated priest of Babylon, who had a knowledge of the Greek language. He wrote, in Greek, three books of Babylonian-Chaldæan history, in which he made use of the oldest temple archives of Babylon. The work was highly esteemed by Greek and Roman historians, but unfortunately only a few fragments have been preserved by Josephus, Eusebius, Syncellus, and others. Even these fragments are of great value, as they relate to the most obscure por-

tions of Asiatic history. They have been edited by Richter in his *Berosi Chaldæorum Historiæ quæ supersunt* (1825). The *Antiquitatum Libri Quinque cum Commentariis Joannis Annii*, first published in Latin by Eucharius Silber (Rome 1498) as a work of B., and often republished, was the pseudonymous work of the Dominican Giovanni Nanni of Viterbo.

BERRE, *bār*, Etang de: an extensive lagoon of France dept. Bouches-du-Rhône, with large salt-works and eel-fisheries. It discharges its surplus waters into the sea by the Port-du-Bouc.

BERRETTA, or Birretta, n. *bĕr-rĕt'ta* [It. *berrétta*, a cap. a bonnet]: a square black cap; a scholastic bonnet peculiar to ecclesiastics, and to lawyers on the European continent.

BERRY, n. *bĕr'rĭ*, Berries, n. plu. *bĕr'rĭz* [AS. *berie:* Icel. *ber:* Ger. *beere*, a berry: Gael. *beir*, to produce]: any small juicy fruit. Berried, a. *bĕr'rĭd*, furnished with berries.

BERRY (*Bacca*), in Botany: a small fruit more or less fleshy and juicy, and not opening when ripe. The inner layers of the Pericarp (q.v.) are of a fleshy and succulent texture, sometimes even consisting of mere cells filled with juice, while the outer layers are harder, and sometimes even woody. The seeds are immersed in the pulp. A B. may be one-celled, or it may be divided into a number of cells or compartments, which, however, are united together not merely in the axis, but from the axis to the rind. It is a very common kind of fruit, found in many different natural families, both of exogenous and endogenous plants; e.g. the fruits of the gooseberry, currant, vine, barberry, bilberry, belladonna, arum, bryony, and asparagus, which, though agreeing in their structure, possess widely different properties. Some of them, which are regarded as more strictly berries, have the calyx adherent to the ovary, and the placentas—from which the seeds derive their nourishment—parietal, that is, connected with the rind, as the gooseberry and currant; others, as the grape, have the ovary free, and the placentas in the centre of the fruit.—The orange and other fruits of the same family, having a thick rind dotted with numerous oil-glands, and quite distinct from the pulp of the fruit, receive the name *hesperidium;* the fruit of the pomegranate, which is very peculiar in the manner of its division into cells, is also sometimes distinguished from berries of the ordinary structure by the name *balausta*. See Pomegranate. Fruits like that of the water-lily, which at first contain a juicy pulp, and afterward, when ripe, are filled with a dry pith, are sometimes designated *Berry capsules*. Popularly the term is applied to fruits not strictly berries; for example, strawberry, raspberry, etc., which bear external seeds on a pulpy receptacle.

BERRY, or Berri, *bĕr'rĭ:* one of the old French provinces (now forming the departments of Indre and Cher,

q.v.); lat. 46° 10′—47° 40′ n., long. 1°—3° e., greatest length about 100 m., greatest breadth 90. Having come into the possession of the French crown, it gave title at various times to French princes, the younger son of Charles X. being the last who held it.

BERRY, Charles Ferdinand, Duke de: 1778, Jan. 24—1820, Feb. 13; b. Versailles: second son of the Count of Artois (afterwards Charles X.) and of Maria Theresa of Savoy. In 1792, he fled with his father to Turin; fought with him under Condé against France; afterwards visited Russia, and lived in London and Edinburgh. In 1814 he returned to France, and the following year was appointed by Louis XVIII. commander of the troops in and around Paris. In 1816, he married Caroline Ferdinande Louise, eldest dau. of Francis, afterwards king of the Two Sicilies. On this marriage the continuance of the elder Bourbon line depended. The Duke de B. was assassinated as he was conducting his wife from the opera-house to her carriage, by a person named Louvel. He left only one daughter. Louise-Marie-Thérèse d'Artois, Mademoiselle de France, born 1819; but 1820, Sep. 29, the widowed duchess gave birth to the prince, Henry, Duke of Bordeaux, afterwards styled Count of Chambord. After the July revolution, 1830, in which the duchess exhibited immense force of character and courage, offering herself to lead on the troops against the insurgents, she, with her son, followed Charles X. to Holyrood, but left a considerable party in France in favor of the pretensions of her son as Henry V. of France. During a visit to Italy, the duchess was so far encouraged in her ambition, that a project was formed for reinstating the Bourbons in France; and, accompanied by several friends, she landed near Marseille 1832, Apr. 29. After many adventures, she was betrayed, and was imprisoned in the citadel of Blaye. The confession of the duchess, that she had formed a second marriage with the Neapolitan marquis, Lucchesi-Palli, at once destroyed her political importance, and the government set her at liberty: she died 1870.

BERRYER, *bā-re-ā′* or *bĕr-yā′*, Pierre Antoine: 1790, Jan. 4—1868, Nov. 29: b. Paris: distinguished advocate and politician. He distinguished himself first by his defense of victims of the restoration. In 1829, he was chosen deputy, and ever afterwards steadily represented the rights and policy of the elder Bourbons. His legitimist tendencies kept him for a time in the political background under Louis Philippe; but as the legitimist party in the chamber increased, his position grew in importance. He repeatedly undertook the defense of persons prosecuted by the government, not only of his own party, but republican leaders. It was he who defended Louis Napoleon in the chamber of peers after the Boulogne *attentat*. With the elder Bourbons he was in constant communication, and was one of the heads of the legitimist party who made a pilgrimage to the Count of Chambord in London, 1843. After the revolution of 1848, he represented the

Bouches-du-Rhône; seemed inclined to support the government of the president, Louis Napoleon; and became a member of his privy-council. But this did not hinder him from going to Wiesbaden, 1850, to do homage to the Count of Chambord. On that occasion, he was openly spoken of as the future minister of Henry V. When Changarnier was removed from his command, B. united with Thiers and others to oppose the pretensions of the president, and he was one of the few who boldly protested against the *coup d'état*. In 1854, he was elected a member of the French Acad. His inaugural speech contained some uncomplimentary allusions to the lower empire, and its publication was prohibited, the prohibition, however, being removed in 24 hours. B. added greatly to his reputation as an orator by his defense of Montalembert (q.v.) against the government prosecution, 1858, Nov.

BERSAGLIE'RI: the riflemen or sharpshooters of the Italian army. After the disastrous campaign of Charles Albert against the Austrians in 1848–9, and the abdication of that monarch, his son, Victor Emmanuel, commenced a remodelling of the Sardinian army. One improvement, brought about by General Alessandro della Marmora, was the formation of a corps of B. These were light active soldiers, dressed in a picturesque but serviceable dark-green uniform, and armed with long rifles. Two battalions of these riflemen formed part of the Sardinian army during the Crimean war. During the Italian war of 1859, the B. were engaged in many operations requiring dash and brilliancy. There are over 40,000 in the regular army.

BERSERKER, *bėr'ser-ker* [*ber*, bare, and *serkr*, shirt of mail]: a redoubtable hero in Scandinavian mythology, grandson of the eight-handed Starkader and the beautiful Alfhilde. He despised mail and helmet, and, contrary to the custom of those times, went always into battle unharnessed, his fury serving him instead of defensive armor. By the daughter of King Swafurlam, whom he had slain in battle, he had twelve sons, who inherited the name of B., with his warlike fury.

BERT, *bėr*, PAUL: French statesman and physiologist: 1833, Oct. 19—1886, Nov. 11; b. Auxerre, France. He studied in Paris, abandoned the pursuit of law for that of medicine, and was prof. of physiology in the Faculty of Sciences at Paris. He entered political life as a republican, after Sedan, and filled important offices in the dept. of the North. He became a member of the chamber of deputies 1874, June 9, and took special interest in education. He introduced laws removing primary instruction from control by the religious orders, and making it compulsory. Under Gambetta as premier, B. was minister of public instruction and worship 1881. Notwithstanding his arduous political and educational work, B. continued to apply himself to experiments in physiology, and with the greatest success, drawing world-wide attention by his experiments in vivisection. His works were numerous on scien-

tific subjects, and he wrote much on educational and political themes. In 1886 he was appointed gov. of Tonquin and Anam, but died there the same year.

BERTH, n. *bėrth* [AS. *beorgan*, to protect, to shelter: OE. *barth*, a shelter for cattle; *barthless*, houseless]: a place of shelter; a place to sleep in; a space boarded off in a ship to lie or live in; the clear space or position of a ship at anchor, including a small breadth of sea all round her. To GIVE A WIDE BERTH, to leave considerable room for; to keep at a distance.

BERTHA: name of several famous women in the middle ages, half-historical, half-fabulous (see BERCHTA).

ST. BERTHA, whose day is kept July 4, the beautiful and pious dau. of Charibert, King of the Franks, married (560) Æthelbert, King of Kent, and became the means of his conversion, and of the spread of Christianity among the Anglo-Saxons.

In the romances of the Charlemagne cycle, there figures a BERTHA, called also Berthrada with the Big Foot, dau. of Count Charibert of Laon, wife of Pepin the Little, and mother of Charlemagne.

In the romances of the *Round Table*, BERTHA is the name of a sister of Charlemagne, who makes Milo d'Anglesis the father of Roland.

Better known is BERTHA, daughter of Burkhard, Duke of the Alemanni, and wife of Rudolf II., King of Burgundy beyond Jura, who, after Rudolf's death (937), acted as regent for her infant son, Konrad; afterwards married Hugo, King of Italy; and died towards the close of the 10th c.

BERTHELOT, *bĕrt-lō'*, PIERRE EUGÈNE MARCELLIN: French chemist: b. Paris 1827, Oct. 25; d. there 1907, March 18. After passing through the ordinary studies, he made a specialty of chemical science, with such success that he was appointed (1859) prof. of organic chemistry in the École de Pharmacie, Paris; and 1865 received a professorship in the College de France. In 1876 B. was made inspector-general of higher education, and minister of public instruction 1886. He was noted for his investigations in regard to alcohols, explosives, and the less-known phenomena of heat, in particular having made himself an authority in regard to the action of carbon under different conditions. B. made important discoveries also in regard to the illuminating power of gas, and one of his inventions was a gas thermometer designed for reading high temperatures with great accuracy. He published *La Synthèse Chimique*, and other works.

BERTHIER, *bĕr'te-ā*, ALEXANDRE, Prince of Neuchâtel and Wagram, and Marshal of the French Empire: 1753, Nov. 20—1815, June 1; b. Versailles. His father, a military engineer, trained him for the army, which he entered 1770, and fought with Lafayette in the American War of Independence. At the outbreak of the French Revolution he was appointed maj.gen. of the National Guard of Ver-

sailles, and rose to be a gen. of division, and chief of the staff in the army of Italy, 1795; and in 1798, in the absence of Bonaparte, entered the papal territory, and proclaimed the republic in Rome. He accompanied Napoleon to Egypt in the same year as chief of the staff, a post which he held in all the subsequent campaigns. At the revolution of 18th Brumaire (1799), he became war-minister, and (till 1808) as such signed many important treaties and truces. He always accompanied the emperor, and often rendered important services; for the part he took in the battle of Wagram, he received one of his many distinctions. B. was Napoleon's proxy in the marriage of Maria Louisa, at Vienna, 1810. In the campaigns of 1812, 1813, 1814, he was constantly by the emperor's side, and acted both as chief of the staff and as quartermaster-general. It was only B.'s love of order, quick insight, and activity that could have superintended the movements of so many armies. Napoleon did him full justice on this score, asserting at the same time that he was incapable of leading the smallest *corps d'armée* alone.

On the fall of Napoleon, B. hardly showed due gratitude for the favors heaped upon him. He had to surrender the principality of Neuchâtel; and not to lose more, he submitted to Louis XVIII., who made him a peer and marshal, with the title of Captain of the Guards. Napoleon, who never doubted his secret attachment, made overtures to him from Elba; these he neither answered nor yet revealed to Louis, which made him suspected by both. On the return of Napoleon from Elba, in a fit of irresolution B. retired to Bamberg, in Bavaria, to his father-in-law, Duke William, where his mind became unhinged with the conflict. While looking from the balcony of the palace at a division of Russian troops marching towards the French frontier, the bitter sight was too much—he threw himself down into the street, and thus ended his life. His *Mémoires* appeared 1826.

BERTHOLLET, *bĕr-to-lā'*, Count Claude Louis: 1748, Dec. 9—1822, Nov. 7; b. Talloire, a village of Savoy, near Annecy. He studied at the Univ. of Turin, and obtained a medical degree, 1768. He afterwards went to Paris, where he was appointed physician to the Duke of Orleans. He applied himself with great assiduity to chemistry; in 1781, he was elected a member of the Acad. of Sciences, and, later, the government made him supt. of dyeing processes. In this situation he published a very valuable work on dyeing. In 1785, he announced his adherence to the antiphlogistic doctrines of Lavoisier, with the exception that he did not admit oxygen to be the acidifying principle, and herein he has proved to be right. In the same year, he published a paper on 'dephlogisticated marine acid'—now called chlorine—pointing out its use for bleaching purposes; and following up the experiments of Priestley, he showed ammonia to be a compound of three volumes of hydrogen gas and one volume of azotic gas. During the early part of the French Revolution

B. travelled through the country, giving instruction as to the best means of extracting and purifying saltpetre to be used in the manufacture of gunpowder, and also as to the process of smelting and converting iron into steel. His joining the expedition of Napoleon to Egypt led to the formation of the Institute of Cairo.

BERTILLON, ALPHONSE: a French anthropologist; b. 1853; known as the founder of a system of measurements for the identification of criminals. The system depends on three points: Absolute fixity of the human skeleton after twenty years of age, great diversity of the human skeleton, and the ease of measuring these diversities. Bertillon observed that no two persons could be found whose bodies would be identical in measurement in all their parts, and that a man, after being measured, might return one, five, ten, or fifty years later and his identity would stand revealed. This system has been adopted by the police authorities of the large cities of Europe and the U. S.

BERTILLON SYSTEM. n. *bĕr-tel-yŏng:* a manner of measuring individuals contrived by Dr. Alphonse Bertillon.

BERTIN, *bĕr-tăng′*, LOUIS FRANÇOIS, called Bertin l'Ainé: 1766–1841, Sep. 13; b. Paris: French journalist. He began writing for the press, 1793, and, 1799, set on foot the *Journal des Débats.* B.'s royalist principles offended the government of Napoleon, and cost him imprisonment and banishment to Elba; whence, however, he escaped to Rome, where he formed a friendship with Châteaubriand. In 1804, he returned to Paris, and resumed the editorship of the *Débats,* but was much hampered by Napoleon, who imposed on the paper the title of *Journal de l'Empire,* and by subjecting it to police revision gave it almost an official character. When B., in 1814, became free to follow his own bent, the journal reverted to its royalist principles. During the Hundred Days, it fell into other hands, till the return of the Bourbons restored it once more to B., who, in the meantime, had taken part in the *Moniteur de Gand.* Throughout the restoration, B. gave almost constant support to the ministerial party. Though he did not join in the protest of the liberal journals against the *ordonnances,* he gave his adhesion to the July monarchy, and continued faithfully to support it. He continued to edit the *Débats* till his death.

BERTIN, LOUIS MARIE ARMAND: 1801–1854, Jan. 11; son of Louis François; b. and d. Paris. After the restoration he was sec. to Châteaubriand during his embassy in England. In 1820, he joined the editorial staff of the *Journal des Débats,* and at his father's death assumed the chief direction. As a journalist, he contrived, as well as his father, to maintain a certain independence of the government.

BERTINORO, *bĕr-ti-no′ro:* town of Italy, province of

Forli, formerly belonging to the Papal States, six m. s.e. from Forli, pleasantly situated on a hill, the slopes of which are famous for their wines. At the foot of the hill, to the w., flows the Ronco. B. is the seat of a bishop, and has a cathedral, three other churches, and five convents. It was one of the ancient fiefs of the Malatesta, by whom it was given to the church. Pop. of town, 2,000; of commune, 6,000.

BERTRAND, Henry Gratien, Count: 1773–1844, Jan. 31; b. and d. Châteauroux: one of Napoleon's generals, known for his faithful attachment to the emperor through all his fortunes. He early entered the armies of the Revolution as engineer. He accompanied the expedition to Egypt, and directed the fortification of Alexandria. Returning with the rank of gen. of brigade, he distinguished himself at Austerlitz, and became the emperor's adjutant; and, after the battle of Aspern, 1809, for establishing bridges over the Danube, he was created count and gov. of Illyria. After sharing with credit in the subsequent campaigns, he retired with the emperor to Elba, was his confidant in carrying out his return to France, and finally shared his banishment to St. Helena. On Napoleon's death, B. returned to France, where, though sentence of death had been pronounced upon him—a sentence which Louis XVIII. had wisely recalled—he was restored to all his dignities, and, 1830, appointed commandant of the Polytechnic School. He formed part of the expedition which, 1840, brought back the remains of Napoleon to France.

BERVIC, *ber-vēk'*, Charles Clement Balvay: 1756, May—1822, Mar. 23; b. Paris. In 1790 he made himself famous by a full-length engraving of Louis XVI., from the picture by Callet, one of the finest works of the kind ever produced. The engravings of the *Laocoön*, Regnault's *Education of Achilles*, and Guido's *Rape of Deianira*, also from B.'s graver, show equal beauty of manipulation, with a higher power.

BERWICK, *bĕr'rik* or *bėr'wik*, James Fitz-James, Duke of: 1670—1734: the natural son of James II., by Arabella Churchill, sister of the Duke of Marlborough. He was born in France, where he was educated, and entered the army. After serving in Hungary under Charles of Lorraine, he returned to England shortly before the revolution of 1688, which he exerted himself to prevent. In 1689, he accompanied his father in his Irish expedition, and after the death of St. Ruth had the nominal chief command. He next served in Flanders, under Marshal Luxembourg, afterwards under the Duke of Burgundy and Marshal Villeroi. In 1706, he was created a marshal of France, and sent at the head of an army to Spain where he established the throne of Philip V. by the decisive victory of Almanza. For this important service, he was made a grandee of Spain, under the title of Duke of Liria and Xerica. After several years of inactivity, he received the

command, 1734, of an army intended to cross the Rhine. While besieging Philipsburg, he was killed by a cannon-ball. Contemporary testimony, confirmed by his military conduct, shows B. to have possessed some of the best qualities of a great commander. His defensive campaign in 1709, in Provence and Dauphiné, against the superior force of the Duke of Savoy, has always been regarded as a triumph of strategic skill. He was twice married. His son by the first marriage succeeded to the dukedom of Liria; his dukedom (De Fitz-James) and estates in France passed to his children by the second marriage.

BERWICK, North: seaport town in Haddingtonshire, Scot., at the entrance to the Firth of Forth, 19 m. e.n.e. of Edinburgh. Formerly a mere fishing-village, it is now a fashionable watering-place, famous for its golfing links. The parish includes the Bass Rock, North Berwick Law, and the ruins of Tantallon Castle. The castle is graphically described in Scott's *Marmion*. It is an irregular pile, two m. e. of the town, on a high rock, surrounded by the sea on three sides, with a ditch on the land-side, where there was formerly a drawbridge. It was a stronghold of the Douglas family. N. Berwick Law is a conical hill of an elevation of 612 ft., on the s., close to the town. Pop. of town (1881) 1,698; (1891) 2,376; (1901) 2,784.

BERWICK-ON-TWEED, *-twēd:* seaport town at the mouth of the Tweed, 58 m. s.s.e. from Edinburgh, on the frontiers of England and Scotland. The liberties of the borough, called 'Berwick Bounds,' have an area of 8 sq. m., and with Spittal and Tweedmouth form the 'county of the borough of B.' Though long boasting to be neither in England nor Scotland, and still possessing separate quarter-sessions and commission of the peace, it is now a part of the county of Northumberland (the adjoining parts of which formed till 1844 a detached portion of Durham). The history of B. is full of interest, especially in regard to the Border wars, and the struggles of English and Scots to possess the town. The siege by Edward I., 1296, was especially terrible and memorable. The authentic records of B. begin in the region of Alexander I., 12th c., when it was one of the principal seaports in the kingdom. B. finally passed into the possession of England, 1482. The town has an antiquated and somewhat decaying appearance. It is girded with old fortifications, and has large barracks. Tweedmouth and Spittal (the latter a favorite watering-place), on the s. side of the Tweed, both within the municipality of B., are reached by an old stone bridge, and a magnificent viaduct of 28 arches spans the river, and connects the Northeastern with the North British railway. The shipping belonging to the port, which is an important factor, includes more than 500 fishing-boats. A wet dock has been constructed at a cost of £40,000. Of recent years the salmon fishing has improved, but the herring fish-

ing has declined. For the manufacture of engines and boilers, agricultural implements, etc., B. stands high, and in Spittal there are several large artificial-manure works. It has many places of worship, of the Church of England, Church of Scotland, Eng. Presbyterian, U. P., and other denominations; good day-schools, including Corporation's academy. Public institutions include infirmary and dispensary, museum, literary institute, and subscription library. Pop. (1881) 13,995; (1891) 13,378; (1901) 13,437.

BERWICKSHIRE, *bĕr'rik-shĕr:* maritime and border county in the s.e. extremity of Scotland; bounded n. by Haddington; s. and s.e. by Roxburgh and Northumberland, having a detached portion of Durham on its s.e. limits; e. by the North Sea and Berwick-on-Tweed; and w. by Mid-Lothian and Roxburgh. It extends from e. to w. 35 m., from n. to s. 22 m.; 464 sq. m., or 297,161 statute acres. B. is divided into three districts—the Merse, the Lammermoors, and Lauderdale. The largest and most fertile district is the luxuriant valley of the Merse, believed to be the most extensive and richest piece of level land in Scotland. The Lammermoors, chiefly pastoral, divide the valley of the Tweed from Mid-Lothian and Haddington. Lauderdale runs along the banks of the Leader Water. From its commencement at Lamberton to St. Abb's Head, the coast line of B. extends to 8½ m., or allowing for headlands, 9½. The coast is rocky and bold, with only two bays, at Eyemouth and Coldingham respectively. Geologically, as well as topographically, B. has numerous interesting features—the Lammermoors (the principal summits of which are Lammer Law, Crib Law, Sayer's Law, and Clint Hill, ranging from 1,500 to 1,600 ft. high), consist of Silurian strata, stretching to Abb's Head: in the s., carboniferous rocks are found, while an extensive bed of red sandstone extends easterly from the centre of the county to the sea-coast. On the coast porphyry is found, and some traps and syenite in the interior. Ironstone and thin seams of coal occur, as well as gypsum, clay, and shell-marl. The streams, Blackadder, Whitadder, and Leader, the river Eye being the only exception, are tributaries of the Tweed. Agriculturally, B. is prominent; but it is almost entirely without centres of manufacturing industry. Principal towns are Dunse, Greenlaw, the county town; Lauder, Eyemouth, a prosperous fishing-station; and Cold-stream, where General Monk first raised the Coldstream Guards. Dunse being more central than Greenlaw, the great bulk of the county business has been transferred thither. Many names famous in Scottish annals are closely associated with B.; among others, ancestors of the royal Stuarts; the noble family of Douglas; the Earl of Bothwell; the Duke of B.; and many Scottish judges. The chief antiquities are the ruins of Dryburgh Abbey, Coldingham Priory, Fast Castle, and the remains of British and Roman camps, and barrows. Pop. (1881) 35,392; (1901) 30,824.

BERYL, n. *bĕr'ĭl:* [F. *beryl*—from L. *beryl'lus:* Pers. *bulur*, a crystal]: a precious stone of a deep rich green color. BERYLLINE, a. *bĕr'ĭl-ĭn*, like the beryl; a lapidary's term for the less brilliant and colorless varieties of the emerald. BERYLLIUM, n. *bĕr-ĭl'lĭ-ŭm*, a rare metallic element, called 'beryllium' from the fact that it was first found in the beryl. Its salts have a sweetish taste, and from this circumstance the element itself has received the name glucinum (q.v.).

BERYL, *bĕr'ĭl:* an aluminium and glucinum silicate; with varieties, Ordinary B. and Precious B. or Emerald (q.v.)—not the Oriental Emerald. The color of B. varies from yellowish through green to blue. The finer varieties, transparent and of beautiful color, are distinguished as *Precious B.*, sometimes called *Aquamarine.* These occur in crystals similar in form to those of emerald; but the regular hexagonal prism is more frequently modified by truncation on the angles or edges, acumination, etc. The prisms are often long. Their sides are longitudinally striated, often deeply so; but the truncating or terminating planes are smooth. The coarser varieties of B. (*Common B.*) are also found crystallized, but often massive. B. occurs chiefly in veins that traverse granite or gneiss, or imbedded in granite; sometimes in alluvial soils formed from such rocks. Common B. is found in a number of places in Europe; Rubislaw, near Aberdeen, is a British locality. The mountains of Aberdeenshire, and those of Mourne in Ireland, yield Precious B., which is also found in several parts of Europe and the United States—very large in N. C., and in N. H.

BERZELINE, n. *bĕr'zēl-ĭn* [after *Berzelĭŭs*, a Swedish chemist]: a mineral, selenite of copper, occurring in thin dendritic crusts of a silver-white color and metallic lustre. BERZELITE, n. *bĕr'zēl-īt*, a name applied to several minerals.

BERZELIUS, *bĕr-ze'lĭ-us*, JOHANN JACOB, Baron: 1779, Aug. 29—1848, Aug. 7; b. Westerlösa, in East Gothland, Sweden. While studying for the medical profession at the Univ. of Upsala, he was more attracted by the preparatory natural sciences, especially chemistry. After some medical practice and lecturing, he was appointed (1806) lecturer on chemistry in the Military Acad. of Stockholm, and in the following year prof. of medicine and pharmacy. He was shortly afterwards chosen president of the Stockholm Acad. of Sciences; and from 1818 till his death, held the office of perpetual secretary. The king raised him to the rank of baron; other honors from learned societies were conferred on him; and the directions of the Swedish Iron-works, in consideration of the value of his researches in their particular branch of industry, bestowed on him a pension for life. In 1838, he was made a senator; but he took little part in politics. The field of his activity lay in his laboratory, where he acquired a name of which his country is justly proud. His services to chemistry are too vast to be described here. The science of chem-

istry, as at present organized, rests in a great measure upon the discoveries and views of B., although in not a few points he has been controverted, or found wrong. His multiplied and accurate analyses established the laws of combination on an incontrovertible basis; and to him we owe the system of chemical symbols. He discovered the elements selenium thorium, and first exhibited calcium, barium, strontium, columbium or tantalum, silicium, and zirconium, in the metallic form. The blowpipe in the hands of B. became a powerful instrument in the analysis of inorganic substances. The multitude and accuracy of his researches in every branch of chemical inquiry make it difficult to conceive how one man could have accomplished so much. Of his numerous writings, the most important is his *Lärebok i Kemien* (Text-book of Chemistry, 3 vols., Stock. 1808–18), which has since passed through five large editions, on each occasion being almost wholly rewritten. The best-known edition is in 8 vols. (Brussels, 1835). The book has been translated into every European language. His essay *On the Use of the Blowpipe* exhausts the subject, while his *Annual Reports on the Progress of Physics, Chemistry, and Mineralogy*, undertaken at the request of the Acad. of Sciences, 1822, have proved very valuable to science. Scarcely less so have been the *Memoirs Relative to Physics, Chemistry, and Mineralogy*, of which he was one of the originators and conductors, and to which, during the 12 years they were published, 1806–18, he contributed 47 original papers.

BESANÇON, *be-zong-sān'* (*Vesontio*): cap. of the French dept. of Doubs, formerly cap. of Franche-Comté; on the river Doubs, which divides it into two parts; about 45 m. e. of Dijon; lat. 47° 14′ n., long. 6° 3′ e. It was strongly but irregularly fortified by Vauban, the citadel being considered impregnable. Since that time, the fortifications have been extended and strengthened, and B. is now considered one of the strongest military positions in Europe. It was the ancient Vesontio, Besontium, or Visontium, and was a considerable place even in the time of Cæsar, who, B. C. 58, expelled from Vesontio the Sequani, and in the neighborhood of the city gained a victory over Ariovistus. It then became an important Roman military station. In modern times, after undergoing many changes, it finally came into the possession of France, 1674. Among the modern structures, the Cathedral and the churches of St. John, and the Magdalen, with the Prefecture and the half-Gothic, half-Roman palace of Cardinal Granvella, are most remarkable. B. has considerable manufactures, chiefly watches (of which more than 400,000 are made annually), porcelain, carpets, iron-wire, and beer, and is an important entrepôt for the produce of part of Switzerland and the s. of France. 600,000 bottles of seltzer-water are annually manufactured. Pop. (1901) 55,362.

BESANT, *bĕ'sănt*, ANNIE: theosophist: b. London, Eng., 1847, Oct. 1. She married, 1867, the Rev. Frank

Besant, of the Established Church, bro. of the well-known novelist Walter Besant; but her wide departure from orthodox views led to their separation 1873. The following year she became associated with Charles Bradlaugh, and came prominently before the public as a rationalistic writer. In 1875 she commenced delivering atheistic lectures which she continued till 1880, when she announced her adhesion to Socialism. Then, till 1890, she was prominently identified with the socialistic movement, speaking in meetings, organizing unions, editing a newspaper, etc. For a time she was an efficient member of the London school board. Having joined the Theosophical Soc. 1889, she succeeded Mme. Blavatsky as head of the English branch 1891. She visited the United States and lectured on Social Reform and Theosophy 1891–2–3. She has been before the courts for the alleged immorality of her book, *Fruits of Philosophy* (which she has since repudiated), and in 1889 she lost a suit for libel. Among her numerous publications are *Reincarnation; Seven Principles of Man; Autobiography; Death and After; Building of the Kosmos; In the Outer Court; Karma; The Self and Its Sheaths; Path of Discipleship; Man and His Bodies; Four Great Religions; The Ancient Wisdom; Three Paths to Union with God; Evolution of Life and Form; Dharma; Avataras; Ancient Ideals in Modern Life; Esoteric Christianity; Thought-Power; The Religious Problem in India;* (1902); *The Story of the Great War* (1899); *The Pedigree of Man* (1903); *A Study in Consciousness* (1904); *Theosophy and the New Pyschology* (1904); etc.; and in connection with G. R. S. Mead, translations of tracts and reviews.

BESANT, *bē'sănt*, Sir WALTER: novelist; b. Portsmouth, England, 1836, Aug. 14; d. London, 1901, June 9. He was educated at King's Coll., London, and Christ's Coll., Cambridge, and graduated with mathematical honors. Abandoning his original intention of taking clerical orders, he was appointed to a professorship in the Royal Coll., of Mauritius; but ill health compelled him to resign that post and return to England. He then adopted literature as a profession; and his first book, *Studies in Early French Poetry*, was pub. 1868; 1870 appeared his *French Humorists*. Other works of B. containing the fruit of his studies of French literature are: *Rabelais* (1877), in the series of *Ancient and Foreign Classics; Readings from Rabelais* (1879); and *Coligny* (1879), the latter belonging to the *New Plutarch Series*, of which B. was one of the editors. He entered into a literary partnership with James Rice 1871; their first novel, *Ready Money Mortiboy* (1872), was followed by *My Little Girl; With Harp and Crown; This Son of Vulcan; The Golden Butterfly; The Monks of Thelema; By Celia's Arbor; The Chaplain of the Fleet; The Seamy Side* (1881). Rice died 1882, after which time Mr. B. wrote: *All Sorts and Conditions of Men; The Captain's Room; All in a Garden Fair; Dorothy Forster; Children of Gibeon; The World Went Very Well Then; Herr Paulus;*

The Inner House; The Lament of Dives; The Bell of St. Paul's; For Faith and Freedom; Armorel of Lyonesse; The Ivory Gate (1892); *The Rebel Queen* (1893); *Beyond the Dreams of Avarice* (1895); *The Orange Girl* (1899); *The Alabaster Box* (1900); *The Story of King Alfred* (1901), etc. Among his other works are *The Eulogy of Richard Jeffries* (1888). He labored for many years to promote the interests of all members of the literary profession, more especially in his capacity as editor of the monthly paper, *The Author*. In many of his novels, he had in view schemes of philanthropy and social reform, notably in *All Sorts and Conditions of Men*, in which is described a 'People's Palace.' B. was for several years sec. to the Palestine Exploration Fund, and was first chairman of the London Incorporated Soc. of Authors. He was knighted 1895.

BESEECH, v. *bĕ-sēch'* [OE. *beseeke;* AS. *be*, and *secan*, to seek]: to seek something from a person; to ask for earnestly; to entreat; to implore. BESEECH'ING, imp. BESOUGHT, pp. and pt. *bĕ-sawt'*. BESEECH'INGLY, ad. *-lĭ*.—SYN. of 'beseech': to entreat; solicit; implore; ask; beg; request; supplicate; adjure; crave.

BESEEM, v. *bĕ-sēm'* [*be*, and Icel. *saema*, to be fitting; Ger. *geziemen;* Dut. *betœmen*, to be fitting, to become]: to become; to befit; to be decent for. BESEEM'ING, imp.: ADJ. becoming. BESEEMED, pp. *bĕ-sēmd'*. BESEEM'INGLY, ad. *-lĭ*, fitly; becomingly.

BESEEN, v. *bĕ-sēn'* [*be*, and *sec*]: OE. pp. of BESEE, adapted; becoming.

BESET, v. *bĕ-sĕt'* [AS. *besettan: be*, and *set*]: to place in and around; to surround; to inclose; to press on all sides; to perplex. BESET'TING, imp.: ADJ. habitually attending. BESET', pt. pp.—SYN. of 'beset': to encompass; encircle; surround; inclose; environ; besiege; embarrass.

BESHREW, v. *bĕ-shrô'* [AS. *be*, about; *searwan*, to lay snares, to entrap]: in *OE.*, to ensnare; to circumvent; to deceive; to curse; as a milder form of imprecation.

BESIDE, prep. *bĕ-sīd'* [AS. *be* for *bi*, by; *sidan*, a side]: by the side; at the side of a person or thing; over and above. BESIDES, prep. *bĕ-sīdz'*, in addition to; over and above: AD. or CONJ. more than that; moreover. BESIDE HIMSELF, out of his wits.—SYN. of 'beside': also; besides; except; moreover; too; likewise; unless.

BESIEGE, v. *bĕ-sēj'* [AS. *be;* F. *siège*, a siege, a seat]: to surround any place with soldiers, as a city or town, in order to take possession of it by force; to beset. BESIE'GING, imp.: ADJ. employed in a siege; surrounding with armed forces. BESIEGED, pp. *bĕ-sējd'*. BESIE'GER, n. one who. BESIEGE'MENT, the act of besieging; the state of being besieged.—SYN. of 'besiege': to beset; to encompass; invest; block up; hem in; environ; beleaguer.

BESLAVER, v. *bĕ-slăv'ĕr:* to slaver; to defile with slaver.

BESLERIA, n. *bĕs-lē'ri-a* [named after *Basil Besler*, of Nuremberg, joint editor of a sumptuous botanical work]: genus of the *Scrophulariaceæ* (Figworts). The species are ornamental, and several of them have been introduced from the West Indies and S. America.

BESLOBBER, v.: to beslaver.

BESMEAR, v. *bĕ-smēr'* [*be*, and *smear*]: to cover all over; to soil with dirt. BESMEARING, imp. BESMEARED, pp. *bĕ-smērd'*.

BESMIRCH, v. *bĕsmėrch':* to defile with mud, filth, or the like; figurative, to damage one's character with bad report.

BESOM, n. *bē'zŭm* [AS. *besem*—from *besmas*, rods: Ger. *besen*]: a bundle of twigs or rods for sweeping; a large brush of birch or hair for sweeping; a broom: V. to sweep. BE'SOMING, imp. BESOMED, pp. *bē'zŭmd.*

BESORT, v. *bĕ-sŏrt'* [*be*, and *sort*]: in *OE.*, to sort out or arrange suitably, to suit; to become: N. suitable company; attendance.

BESOT, *bĕ-sŏt* [AS. *be;* Ger. *satt*, full: F. *sol*, dull, gross]: to stupefy; to make dull or senseless. BESOT'TING, imp. BESOT'TED, pp. *OE.*, doted on: ADJ. infatuated; stupefied. BESOT'TEDLY, ad. *-lĭ.* BESOT'TEDNESS, n. stupidity; infatuation. BESOT'TINGLY, ad. *-lĭ.*

BESPANGLE, v. *bĕ-spăng'gl* [AS. *be;* Gael. *spang*, anything sparkling: Dut. *spang*, a spangle]: to adorn with spangles; to cover with glittering objects. BESPAN'GLING, imp. BESPANGLED, pp. *bĕ-spăng'gld.*

BESPATTER, v. *bĕ-spăt'tėr* [Dut. *bespatten*, to splash: *be*, and *spatter*]: to sprinkle with water or mud; to soil by throwing or scattering filth; to cover or asperse with slanders or reproaches. BESPAT'TERING, imp. BESPATTERED, pp. *-tėrd.*

BESPEAK, v. *bĕ-spēk'* [AS. *be*, by; *sprecan*, to speak: *be*, and *speak*]: to address or speak; to speak for beforehand; to engage for a future time; to forebode; to show. BESPEAK'ING, imp. BESPOKE, pt. *bĕ-spōk'.* BESPOKEN, pp. *bĕ-spō'kn.*

BESPET, v. *bĕ-spĕt'*, or BESPIT, v. *bĕ-spĭt'* [*be*, and *spit*]: in *OE.*, to daub or besmear with spittle.

BESPREAD, v. *bĕ-sprĕd'* [AS. *be;* Dut. *spreeden;* Dan. *sprede*, to spread or scatter]: to spread about or over; to cover over. BESPREAD'ING, imp. BESPREAD', pp.

BESPRINKLE, v. *bĕ-sprĭng'kl* [AS. *be;* Dut. *sprenkelen*, to sprinkle]: to scatter over. BESPRIN'KLING, imp. BESPRIN'KLED, pp. *-kld.*

BESSARABIA, *bes-sa-rā'be-a*, or *bes-sârâ'be-â:* govt. in the s.w. of Russia, on the Roumanian frontier. The area, enlarged by the restoration, 1878, of the portion ceded to Moldavia 1856, is about 18,000 sq. m. The Dniester flows along the whole of its n. and e. boundaries; the Pruth separates it from Moldavia on the w.; and it has the Danube

on the s. B. is intersected by several considerable streams, which are much reduced by the summer heats. The climate is, on the whole, mild and salubrious. In the n.w. the country is traversed by well-wooded offshoots of the Carpathian Mountains. Generally, however, B. is flat and fertile, but for want of proper cultivation the land does not yield the rich returns it is capable of doing. Wheat, barley, and millet are raised to some extent, as well as hemp, flax, tobacco, fruit, and wine; but the breeding of cattle is the chief business of the inhabitants. Salt, cattle, wool, and tallow are exported; leather, soap, and candles are manufactured. B., which fell under the power of the Turks, 1503, suffered heavily in all wars with Russia, and was ceded to Russia, 1812. By the treaty of Paris, the portions of B. lying along the Pruth and the Danube—about 4,000 sq. m. with some 200,000 inhabitants were assigned to Moldavia; at the Berlin Congress, 1878, this region was again transferred to Russia. Pop. 1,782,900.

BESSARION, *bes-sa'rĭ-on*, JOHANNES, or BASILIUS; 1395–1472, Nov. 19; b. Trebizond, on the Black Sea; one of the earliest of those scholars who, in the 15th c., transplanted Greek literature and philosophy into the west, and rescued the mind of Christendom from the trammels of scholasticism. B. imbibed his love of Plato's writings from his tutor, Gemistus Pletho. As Bp. of Nicæa, B. accompanied the Greek emperor, John Palæologus, to Italy; and effected, at the Council of Florence, 1439, a brief union between the Greek and the Roman Churches. Soon afterwards, he joined the Roman Church, but always retained a glowing love for his native land. He was made cardinal by Pope Eugene IV., 1439. Ten years later, Nicholas V. created him Cardinal-bishop of Sabina, and in the same year Bp. of Frascati. For five years, also, he discharged the duties of papal legate at Bologna. After the fall of Constantinople, B. visited Germany; and at the diets of Nuremberg, Worms, and Vienna, endeavored to promote a crusade against the Turks. In philosophy, he professed to be a follower of Plato, but without depreciation of Aristotle. His writings, consisting of Latin translations of Greek authors, defensive treatises on the Platonic philosophy, with discourses and letters, have never been published collectively. Twice he was nearly elected pope; but his partiality for the heathen philosophy was probably regarded as some disqualification by the sacred college. B. died at Ravenna, leaving his collection of 600 valuable Greek MSS. to the St. Mark's Library, Venice.

BESSÈGES: industrious and thriving town of France, in the n. of the dept. of Gard, 11 m. n. from Alais; on the river Ceze. A railway connects B. with Alais. There are extensive coal-mines in the neighborhood. Pop. abt. 10,000.

BESSEL, *bĕs'sel*, FRIEDRICH WILHELM: 1784, July 22—1846, Mch. 17; b. Minden: astronomer. In 1806, he was, on the recommendation of Olbers, whom he had greatly

assisted by his remarkable expertness in calculation, appointed assistant to Schröter at Lilienthal. In 1810, he published his researches on the orbit of the great comet of 1807, which gained the Lalande prize of the Paris Acad. of Sciences. In the same year he was appointed director of the new observatory to be erected by the king of Prussia at Königsberg, and repairing thither immediately, superintended the erection and the mounting of the instruments. The establishment was completed in three years. In 1818, B. published his *Fundamenta Astronomiæ*—giving the results of Bradley's Greenwich observations—a work upon which he had been engaged 11 years. It is of the highest value to astronomers. His paper on the precession of the equinoxes gained him the prize of the Berlin Acad. After a series of three years' observations he succeeded in determining the annual parallax of the fixed star 61 Cygni (see STARS), an achievement honorable not only as the first of its kind, but for the marvellous skill and patience necessary for its accomplishment. In the years 1824–33, B. made a series of 75,011 observations in 536 sittings, and completed a catalogue of stars (extending to the ninth magnitude) within the zone from 15° n. to 15° s. declination. These were afterward reduced by Weisse. In 1840, B. indicated the probable existence of the planet Neptune, afterward discovered by Le Verrier.

BESSEMER, *bĕs'sĕ-mėr:* town in Jefferson co., Ala., on the Alabama Great Southern, the Louisville and Nashville, the Georgia Pacific, and the Kansas City and Memphis railroads; 11 m. from Birmingham, the co. seat. It is in a rich iron and coal mining district; and has blast furnaces, rolling-mills, pipe works, foundries, machine shops, planing wood and brick mills, and other industries. It has daily and weekly newspapers, and national and savings banks. Pop. (1910) 10,864.

BESSEMER: city and cap. of Gogebic co., Mich., on the Chicago and Northwestern, the Duluth, South Shore and Atlantic, and the Wisconsin Central railroads; 40 miles e. of Ashland, Wis. It is an important iron-mining and lumbering region; was founded in 1884, and named in honor of Sir Henry Bessemer. It has become important by reason of its mining and manufacturing and its trade relations with surrounding territory. Pop. (1900) 3,911.

BESSEMER, *bĕs'sĕ-mėr,* Sir HENRY: inventor; b. Hertfordshire, England, 1813, Jan. 9; d. London 1898, March 15. He received mechanical training at an early age in the typefoundry of his father, a French artist, and going to London at 18 began his career as a modeler and designer. His earliest invention was an improved method of stamping deeds which the revenue office straightway adopted without giving him any compensation therefor. Late in life he brought the matter to the attention of the government and was then knighted (1879) in acknowledgment of his services in this particular. His inventive ability was next turned to the production of a new method of making bronze-powder or 'gold' paint, as it was called,

which proved a commercial success, and subsequent inventions of his were machines for making Utrecht velvet and improvements in type-casting machinery. At the time of the war in the Crimea he designed a projectile intended to revolve in its flight, but as the cannon of that day were not strong enough to permit of its use, he went on experimenting in Paris under the patronage of Louis Napoleon till he had secured a much improved kind of cast iron. This, however, did not fully satisfy him and he continued at work refining the iron until steel was produced. He took out patents for this invention in 1855, but persevered in experiments till at his London bronze factory steel ingots had been manufactured which could be rolled into rails without hammering. When this process had become fully developed the Bessemer Steel Works were built in Sheffield. On 1856, Aug. 13, he read before the British Association at Cheltenham a paper dealing with the invention which has made his name famous, 'The Manufacture of Malleable Iron and Steel without Fuel.' This was a new and cheap process of rapidly making steel from pig-iron by blowing a blast of air through it when in a state of fusion, so as to clear it of all carbon, and then adding just the requisite quantity of carbon to produce steel—a process which has introduced a revolution in the steel-making trade, cheap steel being now made in vast quantities and used for many purposes in which its price formerly prohibited its application. At the Birmingham meeting in 1865 he read a second paper 'On the Manufacture of Cast Steel, Its Progress and Employment as a Substitute for Wrought Iron.' Bessemer was also the originator of a method still in use for compressing into a solid block the graphite employed in the manufacture of lead pencils; of a system of rollers for embossing and printing paper; of improvements in telephones; and of a ship with a stationary cabin, the latter the only failure of note in the long series of his inventions. In 1859 he received the Telford Medal of the Institute of Civil Engineers; and in 1872 the Albert Medal of the Society of Arts. He was president of the Iron and Steel Institute of Great Britain, 1871–3, and in 1879 became a Fellow of the Royal Society. Engineers have sometimes felt that Bessemer did not receive from his own government the honors that his distinguished services to British industrial development merited and that he was in effect more highly esteemed in the United States. Bessemer was an honorary member of many foreign scientific and engineering societies, among which was the American Society of Mechanical Engineers. Before the latter, in 1896, December, he presented a paper entitled 'The Origin of the Bessemer Process,' printed in its *Transactions* (Vol. XVII. 1890). See STEEL MANUFACTURE.

BESSEMER STEEL PROCESS. See BESSEMER, SIR HENRY; STEEL MANUFACTURE.

BESSEY, CHARLES EDWIN: an Amer. botanist; b. 1845 May 21; was prof. of botany at the Iowa Agricul-

tural College 1870–84; became prof. of the same subject at the University of Nebraska 1884, and chancellor there 1888–91. In the latter year he became president of the Nebraska Academy of Sciences. He is a member of the American Association for the Advancement of Science. His publications include *Botany for High Schools and Colleges, Essentials of Botany, Reports of the State Botanist of Nebraska, Elementary Botany* (1904); *Plant Migration Studies* (1905); etc. In 1892–95 he was editor in charge of the department of botany of *Johnson's Universal Cyclopædia.*

BESSIÈRES, *bā-si-ār'*, Jean Baptiste, Duke of Istria, Marshal of the French Empire: 1768, Aug.—1813, May 2; b. Preissac, dept. of Lot. After serving for a short time in the constitutional guard of Louis XVI., in 1792, Nov., he entered the army of the Pyrenees as a private soldier. In less than two years, he had attained the rank of captain, and passing into the army of Italy, he distinguished himself greatly in the battles of Roveredo and Rivoli. Having been made chief of a brigade, 1798, he in that year accompanied Bonaparte to Egypt, and was conspicuous at the siege of St. Jean d'Arce, and at the battle of Aboukir. Afterwards, and within five years (1800–05), he was made successively gen. of brigade, gen. of division, and marshal of France. For his gallant behavior in Spain he was, 1809, created Duke of Istria. In 1813, he received the command of the whole of the French cavalry.

BEST, William Thomas, English musician: b. Carlisle 1826, Aug. 13; d. Liverpool 1897, May 10. In 1848 he was appointed organist of the Philharmonic Society in Liverpool; in 1852 he went to London and became organist of the Panopticon of Science and Art, and also of the Church of St. Martin-in-the-Fields; in 1854 was organist of Lincoln's Inn Chapel; in 1855 returned to Liverpool, and became organist of St. George's Hall; in 1868 was organist of the Liverpool Musical Society; and in 1872 was again engaged by the Philharmonic Society. He was the author of *The Modern School for the Organ* (1853); *The Art of Organ Playing* (1870); *Arrangements from the Scores of the Great Masters* (1873); *The Organ Student; Organ Concertos; Opera and Oratorio Songs*, etc.

BEST, a. *bĕst* [AS. *betst*, contraction of *betest:* Dut. *best:* Icel. *bestr*]: superl. of *good;* good in the highest degree: Ad. in the highest degree; beyond all others: N. the utmost; the highest endeavor, as to do one's best. At best, in the most favorable view that can be taken. The best, the highest perfection. Do the best, use the utmost power. Make the best, improve or do the utmost. To make the best of a bad bargain, to endeavor as much as possible to mitigate or lessen loss or injury.

BESTEAD, or Bested, v. *bĕ-stĕd'* [AS. *be*, to make; *stede*, place, position: Dan. *bestede*, to place, to bury]: to place in a position good or ill; to profit. Best'ed, v. in *sporting circles*, to be got the best of. Bestead', pp. a.

placed; situated; in *OE.*, treated; disposed. HARD BESTEAD, placed in a position hard to endure.

BESTIAL, a. *bĕst'yăl* [L. *bestĭă*, a beast (see BEAST)]: like a beast; beastly; brutal; filthy. BESTIALITY, n. *bĕst-yăl'ĭ-tĭ*, the quality of a beast; an unnatural crime; moral filthiness. BEST'IALLY, ad. *-lĭ*.—SYN. of 'bestial': beastly; brutish; brutal; vile; sensual; depraved; carnal.

BESTIAIRES, *bā-tĭ-ār* [Fr.]: a class of written books of great popularity in the middle ages, describing all the animals of creation, real or fabled, generally illustrated by drawings. They were most in fashion in the 11th, 12th, and 13th c. They served as encyclopedias of the zoology of those ages, but they had also another use. The symbolism which was then so much in vogue fastened spiritual meanings upon the several animals, until every quality of good or evil in the soul of man had its type in the brute world. It is in this way to the B. that we must look for explanation of the strange, grotesque creatures which are found sculptured on the churches and other buildings of the middle ages. There were B. both in prose and in verse, in Latin and in the vernacular. A few sentences from *Le Bestiaire Divin de Guillaume, Clerc de Normandie, Trouvère du XIIIe Siècle* (Caen, 1852), may help to give some notion of the class of works of which it is a fair example. 'The unicorn,' he writes, 'has but one horn in the middle of its forehead. It is the only animal that ventures to attack the elephant; and so sharp is the nail of its foot, that with one blow it rips up the belly of that most terrible of all beasts. The hunter can catch the unicorn by placing a young virgin in the forest which it haunts. No sooner does this marvellous animal descry the damsel, than it runs towards her, lies down at her feet, and so suffers itself to be taken by the hunters. The unicorn represents our Lord Jesus Christ, who, taking our humanity upon him in the Virgin's womb, was betrayed by the wicked Jews, and delivered into the hands of Pilate. Its one horn signifies the gospel truth, that Christ is one with the Father,' etc.

BESTIR, v. *bĕ-stėr'* [AS. *be*, and *stir*]: to rouse into vigorous action. BESTIR'RING, imp. BESTIRRED, pp. *bĕ-stėrd'*.

BESTOW, v. *bĕ-stō'* [AS. *be*, and *stow*, a place]: to lay up in a place; to give; to confer; to give in marriage; to apply; to impart. BESTOW'ING, imp. BESTOWED, pp. *bĕ-stōd*. BESTOW'AL, n. the act of bestowing; disposal. BESTOW'MENT, n. the act of giving or conferring.

BESTRADDLE, v. *bĕ-străd'dl:* to bestride.

BESTREW, v. *bĕ-strô'* or *bĕ-strō* [AS. *be*, *streówian*, to strew: *be*, and *strew*]: to scatter or sprinkle over: see STREW.

BESTRIDE, v. *bĕ-strīd'* [AS. *be*, *strídan*, to stride]: to stand with the legs open; to extend the legs across; to stride or step over; to have between one's feet. BESTRI'DING, imp. BESTRID, pt. *bĕ-strĭd'*. or BESTROD, pt. *bĕ-strōd'*. BESTRIDDEN, pp. *bē-strĭd'n*.

BESTUD, v. *bĕ-stŭd'* [*be*, and *stud*]: to adorn with studs or shining points. BESTUD'DING, imp. BESTUD, pp.

BESTUSCHEW, *bĕs-tô'shĕf*, ALEXANDER; abt. 1795–1837, June: Russian novelist; captain in a dragoon regt.; and adjutant to Alexander, Duke of Würtemberg. Having been involved with his friend Rylejew in the conspiracy of 1825, he was degraded to the ranks, and exiled to Yakutzk, but, after long entreaty, permitted to enter the army of the Caucasus as a private, 1830. He was killed in a skirmish with the as yet unconquered mountaineers. Two years before his exile he, together with his friend Rylejew, who was put to death 1825, had published the first Russian almanac, *The Pole Star*. His later works, consisting chiefly of novels and sketches, written under the name of Cossack Marlinski, excel in depicting the wilder aspects of nature and the excitements of a soldier's life, but fail in the delineation of character, and are often exaggerated, and sometimes absurd. His principal works are the tale of *Mullah Nur*, and the romance of *Ammalath Beg*. Several of his novels were translated into German by Seebach (Leipsic, 1837), and his collective works appeared at St. Petersburg in 1840, under the name of Marlinski's Tales.

BET, n. *bĕt* [AS. *bad;* Goth. *vadi*, a pledge: Scot. *wad* or *wed*, a pledge, a bet—from *abet*, in the sense of backing]: money pledged to be given on an event or circumstance as it may fall out; a wager; that which is pledged on a contest: V. to lay a wager. BET'TING, imp. BET'TED, pp. BET'TING, a. in the habit of making bets: N. the proposing or laying of a wager. BETTOR, n. one who bets. *Note.*—BET may be connected with Icel. *both*, an offer: Scot. *bode*, a proffer—see Skeat.

BET, a.: see BETT.

BETA, n. *bā'tă* [Gr.]: second letter of the Greek alphabet.

BETA, n. *bē'tă* [L. *bēta*, the beet—said to be from a Celtic word, *bett*, red, in allusion to the red color of the roots]: a genus of plants; the beet-root, or *Beta vulgāris*, ord. *Chenopodĭācĕæ*.

BE'TAIN, or BE'TAINE: an organic base, having the chemical composition $C_5 H_{11}NO_2$, obtained from the juice of the common beet, or from beet-root molasses. It is not present in the beet-root in nature, but is obtained from it by the action of baryta or hydrochloric acid. The hydrochloride is one of its most important salts, and numerous others are also known.

BETAKE, v. *bĕ-tāk'* [AS. *betæcan;* AS. *be*, and Icel. *taka*, to take, to deliver]: to take one's self to; to have recourse to; to apply. BETAK'ING, imp. BETOOK, pt. BETAKEN, pp.

BETANZOS, *ba-tăn'thōs* (anciently *Brigantium Flavium*): town of Spain, province of Corunna, 10 m. s.e. of the city of Corunna. Ancient granite gateways still defend its narrow streets. It has manufactures of linen, leather, and earthenware. Pop. (1877) 8,000; (1887) 8,157.

BETEEM, v. *bĕ-tēm* [in some senses, *be*, and *teem*, to pour forth: in others, Dut. *tæman* or *betæman*, to become, to be fitting: Icel. *tima*, to happen]: in *OE.*, to give; to bestow; to afford; to allow; to deign; to endure.

BETEL, or BETLE, n. *bēt'l* [Port. and F. *betel:* Sp. *betle:* Sks. *patra*]: a narcotic stimulant, much used in the east, and particularly by all the tribes of the Malay race. It consists of a leaf of one or other of certain species of pepper, to which the name of betel-pepper is indiscriminately applied, plucked, green, spread over with moistened quicklime (*chunam*), generally procured by calcination of shells, and wrapped around a few scrapings of the areca-nut (see ARECA), sometimes called the betel-nut, and also known as *Pĭnang.* This is put into the mouth and chewed. It causes giddiness in persons unaccustomed to it, excoriates the mouth, and deadens for a time the sense of taste. It is so burning, that Europeans do not readily become habituated to it, but the consumption in the East Indies is prodigious. The chewing of B. is a practice of great antiquity, and can certainly be traced back to at least B.C. 5th c. It gives a red color to the saliva, so that the lips and teeth appear covered with blood; the lips and teeth are also blackened by its habitual use, and the teeth are destroyed, so that men of twenty-five years of age are often quite toothless. There is difference of opinion whether the use of B. is to be regarded as having any advantages to counterbalance its obvious disadvantages. The theory has been advanced that it is advantageous to a people of whose ordinary food flesh forms no part, and that it is at once the antacid, the tonic, and the carminative which they require.

The name B. is often given to the species of pepper of which the leaves are ordinarily chewed in the manner just described, which are also called B.-PEPPER or PAWN. Some of them are extensively cultivated, particularly *Chavica Betle*, *C. Siraboa*, and *C. Malamiri*, climbing shrubs with leathery leaves, which are heart-shaped in the first and second of these species, and oblong in the third. They are trained to poles, trellises, or the stems of palms, and require much heat with moisture and shade; upon which account, in the n. of India, where the climate would not otherwise be suitable, they are cultivated with great attention in low sheds, poles being placed for their support at a few feet apart. The genus *Chavica* is one of those into which the old genus *Piper* (see PEPPER) has recently been divided. The requisite qualities of B. are probably found in the leaves of numerous species not only of this but of other genera of the same family. The leaf of the Ava (q. v.) is sometimes used.

BETHANY, *beth'a-nĕ:* a village of Brooke co., W. Va., about 12 m. n.e. of Wheeling, on Buffalo creek, a tributary of the Ohio river. It has several churches, and is the seat of Bethany College, with an annual attendance of over 100 students. This institution was established 1841 by

Alexander Campbell, the founder of the sect of Baptists known as 'Disciples.'

BETHANY, *beth'a-ne*, meaning a 'boat-house;' called 'Lazariyeh,' or 'Town of Lazarus,' by the natives of Palestine, in reference to the event narrated in Scripture (John xi.): a retired spot, beautifully situated on the s. slope of the Mount of Olives, 3 m. from Jerusalem; pop. about 500, principally Latins. There is nothing remarkable about the village except some ruins, among which are some which are said to have been the house of Martha and Mary, and the cave or grave of Lazarus; the descent into which is effected by 26 steps cut in the solid rock, leading to a small chamber, about 5 ft. square, also excavated. Near the cave are the ruins of a fort built by Queen Melisinda, 1132, to protect the nunnery founded by her in honor of Martha and Mary.

BETHEL, *bĕth'ĕl*, called Betein by the natives: about 10 m. from Jerusalem; mentioned in Scripture as the scene of Jacob's dream. Here also Abraham pitched his tent. It is now a heap of ruins, entirely deserted, except by a few straggling Arabs.

BETHELL, *beth'el*, The Right Hon. Richard (Baron Westbury): 1800–1873, July 20, b. Bradford, Wiltshire; son of a physician at Bristol: English lawyer. From Bristol grammar-school, he went, at the age of 14, to Wadham College, Oxford, where he was first class in classics, and second class in mathematics, and took his degree of B.A. at the early age of 18. After being a private tutor at Oxford, he studied law, and was called to the bar at the Middle Temple, 1823, Nov. In 1840, he was made a queen's counsel. Elected, 1851, Apr., M.P. for Aylesbury, on the formation of the Aberdeen ministry (1852, Dec.) he was named solicitor-gen. and shortly after knighted. From 1856, Nov., to 1858, March, he was attorney-gen. In 1861, he was made lord chancellor, and at the same time raised to the peerage. He resigned the great seal, 1865. B. was conspicuous for his exertions in the cause of law reform, in improving the system of education for the bar, and in abolishing the ecclesiastical courts, etc.

BETHESDA, *be-thez'da*, Pool of, meaning 'House of Pity:' scene of Christ's cure of the impotent man (Jn. v. 2–9), and resort of the 'impotent, blind, halt, and withered.' The best authorities reject from the account in the Gospel the last phrase of verse 3 and all of verse 4, as probably a later addition to the text. In 1888 a rock-hewn basin or reservoir was discovered, with five chambers adjoining, which is supposed to be identical with the pool of Bethesda. B. is situated within the gates of Jerusalem, near the St. Stephen's gate and the Temple of Omar.

BETHINK, v. *bĕ-thĭnk'* [AS. *be*, *thencan*, to think: Dut. *bedenken*, to consider]: to bring or call to mind by reflection; to bring to recollection. Bethinking, imp. Bethought, pp. *bĕ-thawt'*.

BETHLEHEM: village, Grafton co., N. H., 20 m. w. of Mt. Washington, 10 m. from the Connecticut river, 3 m. from Bethlehem station, on a branch of the Boston, Concord and Montreal railroad, about 125 m. n. of Concord. Having a high situation, its air is salubrious, and it commands a fine view, and is one of the chief places of sojourn for visitors to the White Mountains, especially for sufferers from hay-fever. It has several good hotels and a number of large boarding houses. Pop. (1880) 900; (1890) 1,267; (1910 est.) 1,300.

BETHLEHEM, borough and pleasant summer resort, Northampton, Co., Penn., on the left bank of the Lehigh river, 6 m. e. of Allentown, about 50 m. n. of Philadelphia. A bridge crossing the Lehigh connects it with South Bethlehem, the seat of Lehigh Univ. B. has four railroads connecting it directly with New York, Philadelphia, Allentown, and Bath. It was founded by the Moravians, 1741; has two Moravian schools—a seminary for young ladies, and a theological seminary; also a number of newspapers, banks, churches, tanneries, breweries, silk and knitting mills. In its vicinity (mostly in South Bethlehem) are great iron-furnaces, rolling mills, and zinc-works. The latter have been supplied with ore from the famous mines of Friedensville, a small village 5 or 6 m. w. Bethlehem is attaining a conspicuous position in the musical world from the institution of an annual festival which has developed from the great love of the Moravians (q.v.) for music in their religious services, and especially for the compositions of John Sebastian Bach. The first organized festival was held in 1901, and the movement attracted so much attention that it has been resolved to continue the series. Pop. (1890) 6,750; (1910), 12,837.

BETHLEHEM, *beth'le-hem*, or BEIT-LAHAM, meaning 'House of Bread,' celebrated in Scripture as the birthplace of our blessed Saviour, and of King David; now a small unwalled village, 5 m. s. of Jerusalem; pop. abt. 3,000, all Christian—that is, Latin, Greek, and Armenian. The village is in a most interesting country; and the roof of the Latin monastery—the only public building of any importance, enclosing the cave which is the alleged place of Christ's nativity—commands a beautiful and extensive view of the surrounding country: in the distance, e. are the mountains of Moab and the plains of the Jordan; s. stands the hill of Tekoah, the scene of the pastoral life of the prophet Amos; beyond, and rather more to the e., lies the wilderness of Engedi, to which David retreated for the purpose of concealing himself from the pursuit of Saul, and where the allied armies of the Amorites, Moabites, and others, encamped when they came forth against Jehosaphat; n. is the road to Jesusalem, with the mountains of Judea and Rachel's tomb. The Convent of the Nativity, which encloses the supposed manger, etc., is a large square building, more resembling a fortress than the quiet habitation of the recluse; it was built by the Em-

press Helena, 327, but destroyed by the Moslems, 1236, and, it is supposed, restored by the Crusaders. Within it is the Church of the Nativity, which, like and in connection with the Church of the Holy Sepulchre at Jerusalem, is subdivided among the Latins, Greeks, and Armenians, each community having a separate portion of the edifice for devotional purposes. The church is built in the form of a cross; the nave, which is by far the finest part of the building, belongs to the Armenians, and is supported by 48 beautiful Corinthian columns of solid granite, each between 2 and 3 ft. in thickness, and about 17 in height. The other portions of the church, forming the arms of the cross, are walled up. At the further end of that section which forms the head of the cross, and on the threshold, is a sculptured marble star, which the Bethlehemites say covers the central point of the earth. Here a long intricate passage descends to the crypt below, where the Blessed Virgin is said to have been delivered. The walls of the chamber are hung with draperies of the gayest colors: and a silver star, with the words, '*Hic de virgine Maria Jesus Christus natus est*,' marks the spot of the nativity. The manger stands in a low recess cut in the rock, a few feet from this star.

The other objects of interest in the church are the chapel and tomb of St. Jerome, who became a monk of this convent towards the end of the 4th c.; the chapel and tomb of Santa Paula, a Roman lady, and the founder of several nunneries at Bethlehem; the tomb of St. Eudosia; and the pit into which it is supposed the bodies of the murdered innocents were cast. B. is under the jurisdiction of the Pasha of Jerusalem. The Bethlehemites gain their subsistence chiefly by the manufacture and sale of crucifixes, beads, boxes, shells, etc., of mother-of-pearl and olive-wood. Much wine is made at B., which is considered all over Palestine next best to the Lebanon wine.

BETHLEHEMITES, *beth'le-hem-īts*, or Bethlehemite Brothers: an order of monks at Cambridge, Eng., in the 13th c.; also an order founded in Guatemala, 1673.

The followers of Jerome Huss were styled B., from Bethlehem Church in Prague, where their leader preached.

BETHLEN-GABOR, *bĕt'lĕn-gâ'bor* (or, as he would be called in western Europe, Gabriel Bethlehem or Bethlen, it being a custom in Hungary and Transylvania to make the baptismal follow the family name), King of Hungary; 1580–1629; descended from an ancient and distinguished Protestant family of Upper Hungary, which also possessed important estates in Transylvania. He rose to prominence during the troubles which distracted the principality in the reigns of the two Bathories, Sigismund and Gabriel; and on the death of the latter of these unfortunate princes, succeeded (1613), by the aid of the sultan, in being chosen sovereign prince of Transylvania, the House of Austria being at that time in no condition to offer effective opposition. In 1619, when the Bohemians

rose in defense of their religious and political rights, they looked eagerly for support to B., who had already gained a wide reputation as a warrior and a champion of Protestantism; and the Transylvanian prince, too glad of such an opportunity to gratify his ambition at the expense of his enemy, Austria, eagerly proffered his support. He accordingly marched into Hungary, took Kaschau, his advance more resembling a triumphal procession than a hostile invasion, and on arriving under the walls of Presburg was greeted with every mark of joy by the citizens. With an army now swelled by Hungarian volunteers to nearly 100,000 men, he pursued his route towards Vienna, driving before him the Spaniards under Bucquoy, and the Austrians under Dampierre; and would doubtless have captured the capital, had not the severity of the season, and the want of provisions, combined with the reinforcement of his opponents, and the defeat of his lieutenant, Ragotski, in Hungary, compelled him to retreat for a time. However, though he retired as far as Kaschau, he did not relinquish his hold of Hungary, of which, by the assembled diet, he had been crowned king at Presburg, 1620, Aug. 25; but, resuming the offensive, on the defeat and death of Bucquoy, before Neuhausel, he recovered the fortresses which the imperialists had retaken, and spread terror and devastation to the gates of Vienna. His allies, the Protestants of Germany, being apparently crushed, B. concluded peace with Ferdinand II., receiving the town of Kaschau, with seven Hungarian counties adjoining Transylvania, the principalities of Oppeln and Ratibor in Silesia, and the dignity of prince of the empire. This treaty, however, was soon broken by the emperor, who thought so favorably of his own situation as to imagine he could violate his agreement with impunity; but he was soon undeceived, for B., raising an army of 60,000 men, invaded Moravia, obtained the solemn renewal of the former treaty, and then retreated homewards. His marriage with Catharine of Brandenburg, 1625, involved him once more in the Thirty Years' War; but he finally retired from the contest in the following year, and thenceforth devoted himself exclusively to the internal affairs of Transylvania. He founded the Acad. of Weissenburg at Karlsburg. His brother STEPHEN succeeded him, but was soon compelled to resign the throne.

BETHMANN-HOLLWEG, DR. THEOBALD VON: German statesman, Chancellor of the German Empire; b. Hohenfinow, Prussia, Sept. 29, 1856. Educated at Bonn University. After graduation as a lawyer in 1879 he successively occupied minor government positions in Prussia, until he became lieut. gov. at Bromberg in 1899, and gov. of Brandenburg province in the same year. In 1905 he was made minister of the interior in Prussia and two years later Secretary of State for Home Affairs in the Empire. He succeeded Prince von Bülow as Imperial Chancellor, July, 1909.

BÉTHUNE, *bā-tün′*: town of France, in the dept. Pas-de-Calais; on a rock overlooking the river Brette, and the canals of Lawe and Aire, 16 m. n.n.w. of Arras. It is strongly fortified, part of the works and the citadel having been constructed by Vauban. It has manufactures of oil, linen and cloth, and a considerable trade in the agricultural produce of the surrounding country. Taken by the French 1645, it was retaken by the allies, 1710, but was restored to France by the Treaty of Utrecht. Pop. 11,627.

BETHUNE, *bĕ-thôn′*, Charles James Stewart, Canadian educator: b. West Flamboro, Ont., 1838, Aug. 11. He was graduated from Trinity College, Toronto, in 1859; ordained deacon in the Church of England in 1861, and priest in 1862. He became incumbent of the Credit Mission in 1866, and in 1870 was appointed to the head mastership of Trinity College School, in Port Hope. He is well known as a writer on scientific subjects. He was the first editor of *The Canadian Entomologist,* a monthly magazine. Resigning this place, he edited for a considerable time the entomological department of the *Canadian Farmer* and the *Weekly Globe.* In 1886 he again became editor of the *Canadian Entomologist.* In 1892 he was elected a Fellow of the Royal Society of Canada.

BETHUNE, *bė-thôn′*, George Washington, d.d.: clergyman of the Reformed (Dutch) Church, scholar and poet: 1805, Mar. 18—1862, Apr. 27; b. New York. Graduating at Dickinson Coll. 1823, he studied theol. at Princeton, and was ordained to the Presb. ministry. Afterward entering the Reformed Church, he was pastor of the following churches, at Rhinebeck, N. Y., 1827–30; Utica, 1830–34; Philadelphia: First Chh. 1834–37, Third Chh. 1837–49; Brooklyn, N. Y., Central 1849–50, Church on the Heights 1850–59; associate pastor 21st St. Chh., New York, 1859–62. He died at Florence, Italy. Notable among his many publications are the following: *Early Lost, Early Saved* (1846); *British Female Poets,* with notes biographical and critical (1848); *Lays of Love and Faith* (poems, 1848); *Expository Lectures on the Heidelberg Catechism* (1864). He edited *Walton's Complete Angler* (1846, new ed. 1880).

BETIDE, v. *bĕ-tīd′* [AS. *be, tidan,* to happen]: to happen; to come to; to come to pass; to befall. Betided, pp. *bĕ-tī′ăĕd.*

BETIMES, ad. *bĕ-tīmz′*, or Betime′, ad. *-tīm′* [AS. *be* or *bi,* by; *tima,* time]: before it is too late; seasonably; early; soon.

BETOKEN, v. *bĕ-tō′kn* [AS. *getácnian,* to signify, to betoken—from *ge, tácen* or *tácn,* a token]: to show by tokens or signs; to point out something future by a thing known; to indicate; to foreshow. Betokening, imp. *bĕ-tōk′nĭng,* showing by a sign. Betokened, pp. *bĕ-tō′knd.*—Syn. of 'betoken': to mark; note; indicate; presage; portend; foreshow; augur; forebode; prognosticate.

BETRAY, v. *bĕ-trā'* [Ger. *betrügen*, to deceive: A.S *be;* OF. *traïr:* F. *trahir*—from L. *tradĕrĕ*, to give up or surrender]: to deliver up what ought to be kept; to give into the hands of an enemy by treachery; to be unfaithful to a friend; to violate trust or confidence; to mislead; to entrap. BETRAY'ING, imp. BETRAYED, pp. *bĕ-trād'*. BETRAY'AL, n. act of betraying; breach of trust. BETRAY'ER, n. one who betrays.

BETROTH, v. *bĕ-trŏth'* [AS. *be, treówth*, troth, truth]: to pledge or promise in marriage; to contract with the view to marriage. BETROTH'ING, imp. BETROTHED, pp. *bĕ-trŏtht'*. BETROTHAL, n. *bĕ-trōth'ăl*, and BETROTH'MENT, n. a contract or agreement with a view to marriage

BETROTHMENT, *be-trŏth'ment:* a mutual engagement by a man and a woman with a view to marriage. This anciently in England consisted in the interchange of rings, kissing, joining hands, and the testimony of witnesses; and the ecclesiastical law punished the violation of such B. by excommunication; but such a spiritual consequence was abolished in the reign of George II. A previous B. had also been regarded as a legal impediment to marriage with another. The aggrieved party has the only remedy of an action for breach of promise. In Scotland, when the B. or engagement can be shown to have been a clear, free, and deliberate *present consent* on the part of both the man and woman to form the relationship of husband and wife, such a contract may be enforced against the recusant party; and indeed it constitutes marriage itself See MARRRIAGE: PROMISE: HUSBAND AND WIFE.

BETTER, a. *bĕt'tĕr*, compar. of *good* [AS. *betĕra;* Dut. *bœt;* mod. Dut. *beter*, better, more: Goth. *batiza*, better]. good in a higher degree; more advanced: AD. with greater excellence; more correctly: V. to improve; to raise higher in the good qualities of. BETTERS, n. plu. *bĕt'tĕrz*, superiors in social rank. BET'TERING, imp. BETTERED, pp. *bĕt'tĕrd*. BETTERMENT, the operation of making better; a thing added to make better. SYN. of 'better, v.': to ameliorate; improve; correct; mend; amend; promote; advance; rectify; emend; reform.

BETTERTON, *bĕt'ter-ton*, THOMAS: 1635–1710, b. and d. London: celebrated actor, for about half a century the chief ornament of the English stage. The best contemporary judges, such as Addison, Cibber, etc., bear admiring witness to his dramatic powers, which overcame the natural disadvantages of a low voice, small eyes, and an ungainly figure. His private character was highly estimable, cheerful, modest, and generous. After a retirement of many years, it became known that his circumstances were very straitened, and it was determined to give him a public benefit. The spirited veteran (then in his 74th year) appeared, 1709, Apr. 6, with immense *éclat* in the youthful part of Valentine in Congreve's *Love for Love*. He acted several times again. Mrs. B. took the same rank among contemporary actresses as her husband among actors

BETTING, OR WAGERING: a contract by which two parties or more agree that a certain sum of money, or other thing, shall be paid or delivered to one of them on the happening or not happening of an uncertain event. At common law, wagers are not, *per se*, void, but statutes prohibiting betting have been passed by many of the states. When one loses a wager and gets another to pay the money for him, an action lies for the recovery of the money. Wagers on the event of an election laid before the poll is open, or after it is closed, are illegal. In horse-racing, simple bets upon a horse are unlawful both in England and the United States. In the case even of a legal wager, the authority of a stakeholder, like that of an arbitrator, may be rescinded by either party before the event happens. See POOL: BOOK-MAKING: GAMBLE.

BET'TOLA: town of n. Italy, province of Piacenza, about 20 m. s.w. of the town of Piacenza; on the river Nure, in a fertile district. Pop. abt 6,000.

BETTOR: see under BET.

BET'ULA: see BIRCH.

BETULACEÆ, *bet-ū-lā'sē-ē*, or BETULI'NEÆ: see AMENTACEÆ and BIRCH.

BETULINE, n. *bĕt'ū-līn* [L. *betula;* Eng. *-ine*]: a resinous substance obtained from the bark of the White Birch, *Betula nigra.* It is also called Birch Camphor.

BETWAH, *bĕt'wâ:* river of India, which, after a n.e. course of 340 m., joins the Jumna on the right, about 30 m. to the e.s.e. of Calpee. It rises in the Vindhya Mountains, which, uniting the West and the East Ghauts at their n. extremities, form the dividing ridge between the basins of the Nerbudda and the Ganges. It runs through beds of iron ore, and waters the towns of Bileah and Jhansi. The source of the B. is in lat. 23° 14′ n. and long. 77° 22′ e., and its mouth in lat. 25° 57′ and long. 80° 17′. It is described as a great river, being, even in the dry season, half a mile wide at its junction with the Jumna. It is, however, not navigable in any part of its course.

BETWEEN, prep. *bĕ-twēn'* [AS. *betweoh,* in the middle of two—from *be,* by; *tweoh,* two]: in the middle; intermediate; from one to another; noting difference or distinction of one from another. BETWEEN DECKS, among *seamen,* the space contained between two decks. BETWIXT, prep. *bĕ-twĭxt'* [AS. *betweox* or *betwuxt,* by two]: between; in the midst of two.

BEUTHEN, *boy'tĕn* or BUTOM: town of Prussian Silesia, 50 m. s.e. from Oppeln, near the Polish frontier. It is a centre of mining and metallurgy and has manufactures of woolen cloths and earthenware. The language generally spoken is Polish. Pop. 42,343.

BEVEL, n. *bĕv'ĕl* [OF. *beveau,* a carpenter's bevel: Sp. *baivel*]: something having an angle other than a right or 90° angle; a surface that is set at such an angle to another

larger or more important surface. A B. is said to be *standing* when the angle is obtuse, and to be *under* B when it is acute. V. to have a bevel or angle other than 90°; to slant or slope. ADJ. slanting, oblique, beveled; pertaining to any tool, etc., characterized by such an angle. BEVELLED or BEVELED, pp. *běv'ĕld*: ADJ: having a bevel; forming a bevel or slant. BEVELLING or BEVELING, imp. *běv'ĕl-ing*: N. a beveled or slanting surface; the act of forming a bevel. BEVELING-BOARD, n. a board on which something is beveled. BEVELING-PLANE, n. a plane for cutting a bevel. BEVELING-MACHINE, n. a mechanism for beveling a surface. BEVELMENT, n. a beveled condition, specifically in crystallography, the replacement of a crystal's edge by planes having the same incline or bevel toward the main surfaces. BEVELWISE, n. at an angle; in the form of a bevel. BEVEL-ANGLE, n. an angle other than a right angle. BEVEL-GEAR, n. a gear-wheel having slanting teeth for transmitting motion at an angle so-called even if the angle of the gears be 90°. See GEAR. BEVEL-JOINT, n. a joint in woodworking, that is mitred. BEVEL-PROTRACTOR, a protractor having a graduated arc, and an arm swinging radially to measure angles—the most common form of protractor. BEVEL-SQUARE, n. a simple instrument for measuring or laying out angles, consisting of two straight strips, as of metal, clamped together centrally so that they can be shifted to almost any angle. BEVEL-WHEEL, n. a bevel-gear.

BEVELAND, *bev'e-lând*, NORTH and SOUTH: two islands in the estuary of the Scheldt, Netherlands, province of Zeeland. South B. is the largest and most fertile. The chief town, Goes (Hoos), near the n. side, is well built; pop. 5,000. Making salt, leather, beer, candles, oil, chocolate, weaving cottons, and book-printing are the chief industries. South B. produces wheat and other grain, colza, madder, potatoes, and fruit abundantly. Fish are plentiful. Pop. of South B. 23,000. North B. is low and marshy, has an area of 15,250 acres; pop. 6,000, employed with agriculture. Both islands have suffered dreadfully from inundations. In 1532, North B. was completely covered with water, many of the inhabitants perishing; and it remained submerged for several years. At the same time, the flourishing town of Romerswaal was separated from South B., and afterwards so encroached on by the sea, that the whole of the inhabitants had to leave it. The islands also suffered considerably from inundation in 1808. Within recent years, much good has been effected by drainage.

BEVER, n. *běv'ėr* [OF. *bevre;* It. *bevere*—from L. *bibĕrĕ*, to drink]: in *OE.*, any refreshment taken between regular meals; refreshment of drink: V. to partake of refreshments between meals. BEV'ERING, imp. BEVERED, pp. *běv'rd*. BEVERAGE, n. *běv'ėr-āj* [F. *beuvrage:* OF. *bovraige*, drink, a beverage]: a liquor for drinking, an agreeable drink.

BEVERIDGE, *bĕv'er-ĭj*, ALBERT JEREMIAH, American lawyer: b. Highland County, Ohio, 1862, Oct. 6. He was brought up on a farm; graduated at De Pauw University; and engaged in law practice in Indianapolis. He entered political life in 1883, and soon won a reputation as an effective orator. On 1899, Jan. 17, he was elected United States senator for Indiana, as a Republican. Soon after his election he went to the Philippine Islands; made a thorough study of political and material conditions there; and, on the assembly of Congress in December following, delivered a thrilling speech in the Senate in support of the administration's policy concerning the new possessions in the East. He has written *The Young Man and the World* (1905).

BEVERIDGE, KÜHNE (COGHLAN), American sculptor: b. Springfield, Ill., 1877, Oct. 31. She studied under Rodin in Paris and O'Donovan in New York, and in 1893 married Charles Coghlan. Her works have been exhibited in New York, London, and Paris. She obtained honorable mention at the Paris Exposition of 1900.

BEVERIDGE, WILLIAM, English divine: b. Barrow, Leicestershire, 1637, d. Westminster, 1708. He studied at St. John's College, Cambridge, devoting his attention particularly to Oriental literature. In 1658 he published a work on Eastern tongues, especially Hebrew, Chaldee, Syriac, Arabic, and Samaritan, accompanied with a Syriac grammar. In 1660 he took orders, and obtained the vicarage of Ealing in Middlesex, where he wrote a useful *Introduction to Chronology*. In 1672 he was appointed to the rectory of St. Peter, Cornhill, London, and the same year published his *Synodicon* in two folio volumes, containing the Apostolic canons, decrees of the councils received by the Greek Church, and the canonical epistles of the early Fathers. This work called forth an opponent, to whom Beveridge replied in a *Vindication*. In 1674 he obtained a prebend in St. Paul's, and in 1681 was appointed archdeacon of Colchester. In 1684 he became prebendary of Canterbury, and in 1688 was appointed chaplain to William and Mary. Shortly after, the see of Bath and Wells was offered him; but it as had become vacant by the conscientious refusal of Bishop Ken to take the new oaths, Beveridge, to his honor, declined to accept it. The episcopal dignity, however, was only delayed; in 1704 he became bishop of St. Asaph. Among his best-known works are *The Church Catechism Explained; Private Thoughts upon a Christian Life;* and *The Great Necessity and Advantage of Public Prayer and Frequent Communion*. Collective editions of his works were published in 1824 and in 1842–6.

BEVERLAND, *bev'er-lânt*, ADRIAN: b. abt. the middle of the 17th c., at Middelburg, Zeeland; d. soon after 1712: Dutch scholar who, by several of his writings, but more especially by his unorthodox interpretation of the Fall, caused great excitement among the theologians of his day.

Having studied law, visited Oxford Univ., and settled as an attorney in Holland, he published, 1678, his pamphlet, *Peccatum Originale*, which was not only burnt at the Hague, but led to his own imprisonment, and to his expulsion from Utrecht and Leyden. On his return to the Hague, he wrote *De Stolatæ Virginitatis Jure* (The Hague, 1680), which gave still greater offense. Soon afterwards, going to England, he found a supporter in Isaac Vossius, and probably received his degree as doctor of civil law in Oxford. His virulent attacks against several dignitaries of the English Church indicate that he met with much theological opposition in England also. Probably it was the death of his benefactor, Isaac Vossius, 1689, that led him in 1693 to repudiate his earlier writings.

BEVERLEY, *bĕv'er-lĭ*, SAINT JOHN OF, English divine: b. about the middle of the 7th century at Harpham, Yorkshire; d. Beverley, 721. He was educated at Canterbury under Archbishop Theodore, and became a monk under Hilda in the monastery founded by her at Whitby. In 687 he was appointed to the see of Hexham, and in 705 was transferred to York. He founded a convent of nuns at Beverley, and built the choir of the church there. He resigned his bishopric and retired to Beverley in 718. Bede, who is said to have been his pupil, speaks of him with great veneration. He was canonized in 1037, and his remains were placed in a costly shrine, in Beverley minster. His fame was so widespread that when William the Conqueror led his army to the north and ravaged the country he saved the town of Beverley out of respect to the memory of the bishop. In 1416 Archbishop Chicheley ordered the aniversary of his death to be celebrated as one of the festivals of the Church, and special privileges were conferred on his church at Beverley by several English sovereigns. He is said to have written an *Exposition of Luke* and *Homilies on the Gospels*.

BEVERLEY, ROBERT, American historian: b. Virginia, 1675; d. 1716. He was educated in England and about 1697 became clerk of the Council of Virginia and had charge of the records of the colony. He was the author of a *History of the Present State of Virginia*, published in 1705, a most interesting account of the details of the daily life in colonial Virginia. A reprint was published in Richmond in 1855.

BEVERLEY, chief town of the E. Riding of Yorkshire, Eng., 1. m. w. of the river Hull, with which it communicates by canal, and 10 m. n.n. w. of the city of Hull. Its trade consists in corn, coal, and leather, and there are several whiting and agricultural implement manufactories. In B. is the superb Gothic minster of the Collegiate Church of St. John, ranking next to York minster among the ecclesiastical structures of the country, and exhibiting different styles of Gothic architecture; the oldest part being of the 13th c. B. arose out of a priory founded about 700, and received its name from Beverlac,

'lake of beavers,' from the great number of these animals in a neighboring lake or morass. Pop. 13,185.

BEVERLOO, *bā-ver-lō'*: village of Belgium, province of Limburg, 12. m. n.w. of Hasselt. On the extensive heaths near is the premanent military camp for the instruction of the Belgian army.

BEVERLY: city (since 1894), Essex co., Mass., on a small inlet of the ocean, 2 m. n.e. from Salem, with which it is connected by a bridge, 18 m. n.n.e. from Boston, on the Boston and Maine railroad (Eastern Division). It is principally engaged in the manufacture of women's boots and shoes, and leather; also has a good harbor, and derives considerable benefit from the fisheries. It is the seat of the New England Institute for the Deaf and Dumb, and contains high and graded schools, a public library, a national bank, a number of handsome residences. The B. beaches are peculiarly fine, and between B. and Manchester the picturesque 'Beverly shore' is lined with beautiful residences in ornamental grounds, many of them occupied in summer by wealthy Boston families. Pop. (1900) 13,884. (1910) 18,650.

BEVILLE, n. *bĕv'ĭl* [see BEVEL]: in *her.*, any opening or appearance like a bevel or slant.

BEVY, n. *bĕv'ĭ* [It. *beva*, a bevy: F. *bevée*, a flock or brood]: a flock of birds; a company; a number of young women together.

BEWAIL, v. *bĕ-wāl'* [AS. *be;* Icel. *väla*, to lament]: to lament; to express grief or sorrow for. BEWAIL'ING, imp.: ADJ. lamenting. BEWAILED, pp. *bĕ-wāld.* BEWAIL'INGLY ad. *-lĭ.* BEWAILABLE, a. *bĕ-wāl'ă-bl*, that may be sorrowed for. BEWAIL'ING and BEWAIL'MENT, n. lamentations; the act of mourning for. BEWAIL'ER, n. one who.—SYN. of 'bewail': to bemoan; lament; deplore.

BEWARE, v. *bĕ-wār'* [AS. *bewarian;* Dan. *bevare;* OE. *be, war*, wary]: to take care—followed by 'of'; to regard with caution; to avoid. *Note.*—This verb is now used only in the infinitive and imperative, and was in OE. written as two words—*be ware.*

BEWDLEY, *būd'lē* (formerly *Beaulieu*, from its pleasant situation): municipal borough on the right bank of the Severn, in the n.w. of Worcestershire, 14 m. n.n.w. of Worcester. It has manufactures of leather, combs, lantern leaves, carpets, and iron and brass wares. The chief transit for goods is by the Severn. Near the town is a public park of 400 acres, with fine groves of elm, oak, and plane. Pop. abt. 3,000.

BEWICK, *bū'ik*, THOMAS: 1753–1828, Nov. 8; b. Cherryburn, near Newcastle-on-Tyne, Eng.: wood engraver. Apprenticed to Beilby, an engraver in Newcastle, he was intrusted at the age of 17 with the cutting of the whole of the diagrams in Hutton's treatise on *Mensuration.* He afterwards illustrated Gay's *Fables*, obtaining, 1775, for one of the cuts, the *Old Hound*, the prize which the Soc.

of Arts had offered for the best wood-engraving. In 1790, B., who had entered into partnership with Mr. Beilby, completed, with his brother John, who was his pupil, the illustrations for a *General History of British Quadrupeds*, which raised his reputation far above any of his contemporaries, and gained for him the appellation of the reviver of wood-engraving. Considered as works of art, these illustrations are still unrivalled in graphic force of expression and fidelity to nature, though the great mechanical improvements in the art introduced since give superior clearness and delicacy of execution to some of the best cuts of the present day. Assisted by his brother, B. illustrated Goldsmith's *Traveller* and *Deserted Village*, Parnell's *Hermit*, and Somervills'e *Chase;* and in 1797 appeared the first vol. of his *History of British Birds*, followed, 1804, by the second. This splendid work was entirely B.'s own, his brother having died 1795. B.'s last work, the unfinished proofs of which he received the Saturday before his death, at Gateshead, is called *Waiting for Death*, and represents, with great pathos and truth, an old worn-out horse. It was designed to assist in the prevention of cruelty to animals. A large cut of a bull—of the Caledonian breed—is considered B.'s *chef-d'œuvre*. B. had many pupils, some of whom became eminent engravers. See *Life* by Thomson (1882), and Dobson (1884).

BEWILDER, v. *bĕ-wĭl'dėr* [Ger. *verwildern,* to grow wild or unruly: *be,* and Icel. *villr,* wandering at large]: to perplex; to puzzle; to lead astray. BEWIL'DERING, imp. BEWIL'DERED, pp. *-dėrd.* BEWILDEREDLY, ad. *bĕ-wĭl-dėrd-lĭ.* BEWIL'DERMENT, n. the state of one bewildered; confusion.—SYN. of 'bewilder': to perplex; confuse; entangle; puzzle; confound.

BEWITCH, v. *bĕ-wĭch'* [AS. *be, wiccian,* to be a witch; *wicce,* a witch]: to gain power over by charms or incantations; to please in the highest degree; to fascinate—used often in a bad sense. BEWITCH'ING, imp.: ADJ. having power to charm or fascinate. BEWITCHED, pp. *bĕ-wĭcht'.* BEWITCH'ER, n. one who. BEWITCHERY, n. *-ėr-ĭ,* irresistible power possessed by any person or thing over a creature; fascination. BEWITCH'INGLY, ad. *-lĭ.* BEWITCH'MENT, n. irresistless power over; fascination.

BEWITS, n. *bē'wĭts:* the leathern straps with which bells are fastened to a hawk's legs.

BEWRAY, v. *bĕ-rā'* [AS. *be, wregan,* to accuse, to discover: Goth. *vrohjan;* Ger. *rügen,* to accuse]: to make manifest the presence of; to give such signs of existence as to attract notice; to show; to discover; to betray; BEWRAY'ING, imp. BEWRAYED, *bĕ-rād'.*

BEXAR, *bā'ar,* or *bā-hâr',* SAN ANTONIO DE: town in Texas: see SAN ANTONIO.

BEY, n. *bā* [Turk. *beg.* a prince or chief]: the governor of a Turkish province; a prince; in colloq. usage, a Turkish gentleman. BEY'LIK, the province governed by a bey.

BEYOND, ad. prep. *bĕ-yŏnd'* [AS. *begeond*—from *geond*, thither, yonder]: at a distance; at the further side; out of reach; above. To GO BEYOND, to surpass; to deceive.

BEYROUT, or BEIRUT, *bā'rôt: Berothai* or *Berothah* of the Old Test. (2 Sam. viii. 8; Ezekiel xlvii. 16); and the *Berytus* of the Romans: town on the coast of Syria. It was besieged and captured by Baldwin I., King of Jerusalem, 1111; recaptured from the Christians, 1187. In 1197, it again came into the hands of the Christians, and then successively under the Saracen, Seljukian, and Turkish sultan. In course of the operations to support the Turkish claims against the assumed power of the pasha of Egypt, B., in 1840–1, was bombarded by the English fleet under Sir C. Napier, taken, and delivered over to the Turks.

B. is a flourishing commercial city, in a most picturesque position on the Syrian coast, at the foot of Lebanon, 55 m. from Damascus, and 147 from Jerusalem. It is the chief seaport, market-town, and emporium of all the trade with the shores of Syria, Palestine, and Cilicia. Many European merchants are established in B., and there is a branch here of an English bank (the Ottoman). There is good anchorage in the roadstead, with shelter during stormy weather in the Beyrout river, about 3 m. from the town. A commercial tribunal, composed of European and native merchants, to adjudicate all mercantile disputes and bankruptcies, has lately been established; and consuls from all nations reside at Beyrout. Ship-building has begun to attract the attention of the natives, who have built and launched at B. several vessels of fifty to eighty tons within the last few years. There are extensive factories in the neighborhood, producing 'Syrian silk,' much esteemed in the London and Lyon markets. In 1859, a line of omnibuses, the first in Syria, was established at B. The natives at first regarded them with astonishment, and crowded from all sides to see them pass. A French company completed, 1862, a good road from B. to Damascus. In 1875, an English company completed an extensive system of water-works, bringing a supply of excellent water from the Nahr-el-kelb, or Dog river, a distance of 9 m. The town has lately been improved by the removal of the walls which formerly surrounded it. From its proximity to the mountains of Lebanon, on which the climate is most agreeable and salubrious, B. is an attractive place of residence. A considerable increase in population is due to the settlement, 1860, of numbers of the Christian refugees from Damascus. The majority of the inhabitants are nominally Christian. B. is a seat of successful labor by missionaries from America and Britain. Pop. (1835) 12,000; (1890) 105,400; (1900) 120,000.

BEZA, *be'za*, THEODORE (properly, De Bèze): 1519, June 24—1605, Oct. 13; b. of a noble family at Vezelai, Burgundy: next to Calvin the most energetic and influential of the Genevese reformers. He received an admirable education in Orleans, from Melchoir Wolmar, a German,

who was especially learned in the Greek language, and also imbued with the principles of the Reformation, which he communicated to his pupil. As early as 1539, B. became known as a writer of witty and elegant but indecent verses, the publication of which (1548) caused him many bitter regrets in after-days, when his heart was purer. In his twentieth year, he obtained his degree as licentiate of civil law, and went to live in Paris, where he appears to have spent several years in a kind of fashionable dissipation, though he does not accuse himself of any gross profligacy. B. possessed a handsome figure, which, together with his fine talents and good birth, opened to him the most brilliant prospects. Although not a priest, he pocketed the revenues of two benefices, while his income was largely increased by the death of an elder brother. It was the desire of his relatives that he should enter the priesthood, but a private marriage which B. had contracted rendered this impossible. A severe illness now attacked him, during which the folly and sinfulness of his career vividly presented themselves to his conscience; he repented, and on his recovery, in order to avoid the perils and perplexities of his position, he went to Geneva with his wife, 1548, Oct. Shortly afterwards he was appointed Greek prof. at Lausanne, an office which he held for ten years. In 1550, he published with success a melodrama, entitled *The Sacrifice of Abraham*, and delivered lectures on the Epistle to the Romans and the Epistles of Peter to crowded audiences. Out of these lectures ultimately sprang his translation of the New Test. into Latin. In 1559, he went to Geneva, where he became Calvin's ablest coadjutor, and was appointed a theological prof. and pres. of the college. He had already signalized himself by his work *De Hæreticis a Civili Magistratu puniendis*, in which, like many other good but mistaken men, he approved of the burning of Servetus. His diplomatic tact was particularly good. He induced the king of Navarre to exert his influence on behalf of the persecuted French Protestants, and was pursuaded by the latter to attend the conference of Rom. Cath. and Protestant divines, at Poissy, 1561. Here his courage, presence of mind, and dexterity made a very favorable impression on the French court. Catharine de' Medicis entertained so high an opinion of his abilities, that she desired him to remain in France. While in Paris, he often preached before the king of Navarre and Condé. On the outbreak of the civil war, he accompanied the latter as a kind of military chaplain, and after his capture attached himself to Coligny. In 1563, he once more returned to Geneva. In the following year, Calvin died, and the care of the Genevese church now fell principally upon his shoulders. He presided over the synods of French Reformers, held at Rochelle 1571, and at Nîmes 1572. In 1574, he was deputed by Condé to transact important business at the court of the Palatinate; and in 1586 measured himself with the Würtemberg divines, especially Jacob Andreä, at the religious conference held at Montbeliard. In 1588, his first wife died, and although verging

on seventy years of age, he married another—an awkward incident, it must be confessed, of which his enemies, the Jesuits, tried to make a handle; but B., who still retained complete mastery over his faculties, retorted with his accustomed liveliness and skill. Eight years before his death, his calumniators spread the extremely foolish report that B. was dead, and at the last hour had returned to the bosom of the church. The witty patriarch replied in a poem full of sparkling vigor.

B. was thoroughly grounded in the principles of his master, Calvin, in whose spirit he vigorously ruled the Genevan Church for 40 years, exercising the influence of a patriarch. To secure its unity, strength, and permanence, he spared no pains, sacrificing even his personal possessions. By his abundant learning, his persevering zeal, his acute intellect, his fine eloquence, and his impressive character, he rendered it important services. His numerous theological writings, however, are not attractive to posterity, and have almost ceased to be read. The works by which he is best known are his translation of the New Test. into Latin, and his *History of the French Protestants from* 1521 *to* 1563.

BEZA'S CODEX, or CAMBRIDGE MANUSCRIPT of the New Testament: See CODEX BEZÆ.

BEZANTLER, n. *bĕz ănt'lĕr* [L. *bis*, twice; Eng. *antler*]: the second antler of a stag.

BEZANTS, *be-zănts':* circular pieces of bullion, generally gold, without any impression, supposed to represent the old coinage of Byzantium, brought home by the Crusaders, hence of frequent occurrence as heraldic charges. B. are generally introduced into the arms of banks, and also into those of individuals who have been specially connected with money. Similar figures, when not colored *or* (gold), or *argent* (silver), are known in heraldry by the general term of *roundels*. A *bezanty cross* is a cross composed of B.; and *bezanty*, or *bezantée*, is the term used when the shield, or any particular charge, is strewed with bezants.

BEZDAN, *bĕz-dân':* a market-town of the Austrian empire, in the Hungarian province of Bacs, about 3 m. e. of the Danube, and 12 m. w.n.w. from Zombor. Pop. 8,000.

BEZEL, n. *bĕz'ĕl* [Sp. *bisel*, the basil edge of the plate: F. *biseau*, aslant]: the ledge which surrounds and retains a jewel or other object in the cavity in which it is set.

BEZETHA: see JERUSALEM.

BÉZIERS, *bā-ze-ā':* city of France, dept. of Herault; lat. 43° 21′ n., long. 3° 13′ e.; pleasantly situated on a hill, in the midst of a fertile region, at the junction of the Orb and the Canal du Midi, about 38 m. s.w. of Montpellier. It contains some interesting architectural and antique buildings—the principal being the cathedral, a noble Gothic edifice; the churches of La Madeleine and St. Aphrodise; and the ancient episcopal palace. The old citadel has been destroyed, but the walls remain, and form a promenade. B. has manufactures of silk stockings, woolens, gloves,

parchment, glass, soap, leather, and much esteemed confectioneries. It has also extensive brandy distilleries, and is the centre of most of the trade of the district. The town is supplied with water raised from the Orb by a steam-engine. Pop. (1881) 42,135; (1891) 42,785; (1901) 52,510.

B. is a place of great antiquity, and contains Roman remains. It is historically interesting in connection with the massacre of the Albigenses, its inhabitants having been indiscriminately put to the sword by Simon de Montfort and the pope's legate, for having afforded protection to the fugitives in 1209. B. suffered also in the religious wars of the 16th century.

BEZIQUE, a. *bā-zēk'* [F.]: a French card-game.

BEZOAR-STONE, *bēz'ōr-stōn* [OF. *bezoar*—from Port. *bezoar*—from Pers. *pad*, expelling; *zahar*, poison]: stony concretion found in the stomachs of goats or antelopes, and formerly much valued for imaginary medicinal virtues, particularly as an antidote to poisons. Concretions of various kinds are found in the stomachs of herbivorous quadrupeds, generally having for their nucleus some small indigestible substance which has been taken into the stomach. Sometimes they are of a radiating structure; sometimes formed of concentric layers; sometimes they are composed principally of superphosphate of lime, sometimes of phosphate of ammonia or magnesia. Other concretions found in the intestines, etc., of various animals are sometimes called bezoar. See CALCULI. The value of a B. being supposed to increase with its size, the larger ones have been sold, particularly in India, for very great prices. In *geol.*, B. is a stony concretion usually composed of concentric layers. In *chem.*, BEZOAR MINERAL, oxide of antimony. BEZOARDIC, *bē'zō-ăr'dĭk*, of or like bezoar. BEZOAR GOAT, kind of gazelle which produces the bezoar.

BEZONIAN, n. *be-zō'nĭ-an* [F. *besoin*, want]: a person in want; a beggar; a low fellow; a scoundrel.

BHADARSA: town of British India, in the United Provinces of Agra and Oudh, on the Tons, 75 m. e. from Lucknow. Here is an eleemosynary establishment, founded by the Nawab Vizier Asaf ud Dowlah, with an endowment of 15,000 rupees a year, the proceeds of which are divided indiscriminately among Mussulman and Hindu religious mendicants. It is under the charge of a Seiad, or descendant of Fatima. Pop. of B. 5,000, of which 2,000 are Mussulmans.

BHADRINATH, *b'hâd-rin-ât'h'*: town of Gurhwal, in the United Provinces of Agra and Oudh, India; in a valley of the Himalaya, 25 m. s. of the Manah Pass, which leads into Tibet; lat. 30° 44′ n., long. 79° 32′ e. Its highest point is 10,294 ft. above the sea; while about 12 m. to the w. is a group of summits, called the Bhadrinath Peaks, having the respective elevations of 23,441, 23,236, 22,934, 22,754, 22,556, and 21,895 ft.; the e. also, and the s.w., presenting detached mountains of similar magnitude. B. is on the right bank of the Vishnugunga, a feeder of the Aluknunda, which itself again unites with the Bhageer-

ettee to form the Ganges. The chief attraction of the place is its temple, which, though the existing edifice is modern, is said to be an establishment of great antiquity. This temple overhangs a tank about 30 ft. square, supplied, by a subterranean passage, from a thermal spring in the neighborhood. As ablution in these waters is held to cleanse from all past sins, B. is a grand resort of pilgrims, every year bringing large numbers, but every twelfth year, when a periodical festival is celebrated, collecting fully 50,000. From Nov. to April, the temple and its deity are abandoned even by the attendant Brahmins, on account of the cold.

BHAGAVAD-GÎTÂ (i. e., Revelations from the Deity): title of a religious metaphysical poem, interwoven as an episode in the great Indian epic poem of the Mahâbhârata (q. v.). Two hostile armies, the nearly related Kurus and Pândus, are drawn up ready for battle; the trumpets sound the opening of the combat; and the Pându Ardshuna mounts his chariot, which is guided by the Deity himself as charioteer, in the human form of Krishna. But when Ardshuna perceives in the hostile army his relatives, the friends of his youth, and his teachers, he hesitates to commence the struggle, held back by the doubt whether it were lawful for him, for the sake of the earthly gain of reconquering his father's kingdom, to transgress the divinely approved ordinances for the government of the state. Upon this, Krishna sets forth, in a series of eighteen poetic lectures, the necessity of proceeding, unconcerned as to the consequences. In the progress of his long discourse, a complete system of Indian religious philosophy is developed, in which the highest problems of the human mind are treated with clearness of thought and elegance of language. It is impossible to determine when and by whom the work was composed. It is not, however, one of the first attempts of Indian philosophy, for it is rather of an eclectic nature; and before it could have been composed, there must have been a long period of intellectual cultivation in many philosophical schools. It is not unlikely that it was written in the first century after Christ. The work is looked upon with great reverence in India, and has been the subject of numerous commentaries (the best is that of Srîdhara-Svâmin, pub. Calcutta, 1832), and it has likewise been translated into various Indian dialects. Five different metrical versions in Hindi appeared in Bombay, 1842; a translation into the Telugu dialect in Madras, 1840; into the Canarese, Bangalore, 1846, etc. The best critical edition of the Sanskrit text is that of A. W. von Schlegel (2d ed., Bonn, 1846), to which is added a Latin translation. Among the translations is that into English by Wilkins (Lond. 1785), who had the credit of first making the work known in Europe; that into German, by Peiper (Leip. 1834); and the Greek translation by Galanos (Athens, 1848). See the B. translated by Telang, forming vol. viii. of *The Sacred Books of the East* (1882).

BHAGULPORE': cap. of a district and division of the

same name in Behar, presidency of Bengal; lat. 25° 11′ n. long. 87° e. It stands on the right bank of the Ganges, here 7 m. wide in the rainy season. A seminary for English instruction has been established here by the British government. B. is the headquarters of the troops for keeping in check the Sonthal tribes. In the vicinity of the town are two round towers about 70 ft. in height, of the origin or object of which nothing is known. Pop. of town (1881) 68,238; (1891) 69,106; (1901) 75,760.

Bhagulpore, the district, contains 4,226 sq. m. It lies s. of Nepaul, in lat. 24° 32′–26° 35′ n , long. 86° 21′–87° 33′ e. About a fifth is covered by hills, which, stretching to the s.w., connect themselves with the Vindhya Mountains, the grand dividing-ridge between the Nerbudda and the Ganges. Pop. (1881) 1,966,158; (1891) 2,032,696; (1901) 2,088,560.

Bhagulpore, the division, has 20,492 sq. m.; pop. (1881) 8,063,160; (1891) 8,582,490; (1901) 8,721,484.

BHAMO, *b'hâ-mō′:* town of Burmah, on the Upper Irrawaddy, 40 m. to the w. of the Chinese frontier, and 180 to the n.n.e. of Ava. It contains 1,000 houses, and has round it many populous villages. It is the chief mart of the trade with China, the imports being woolens, cottons, and silks, brought chiefly by caravans. B. has a considerable trade also with the tribes of the neighborhood, who exchange their native produce for salt rice, and a sauce made of dried-fish. There is a British resident, and steamers ply to Rangoon. Pop. est. 2,500.

BHANG: the correct spelling of Bangue, which see: see also Hemp.

BHANPURA: see Bampura.

BHARTRIHARI, *bhăr′trĭ-hăr′ĭ:* celebrated Indian writer of apothegms. Little is known regarding his life. A legendary story makes him the brother of King Vikramâditya, who lived b. c. 1st c., and relates of him, that, after a wild and licentious youth, he betook himself in later years to the ascetic life of a hermit. His name has been given to a collection of 300 apothegms—whether it be that he actually wrote them, or, as is more probable, that the apothegms were popular works, written by many various authors, but ascribed, according to the Indian custom, to some personage well known among the people in legends and tales. Cheerful descriptions from nature and charming pictures of love, alternate in these apothegms, with wise remarks upon the relations of life, and profound thoughts upon the Deity and the immortality of the soul. Bohlen has published an excellent critical edition (Berlin, 1833), with a supplement, *Variæ Lectiones* (Berlin, 1850), as well as a successful metrical translation into German (Hamburg, 1835). B. has a certain special interest as having been the first Indian author known in Europe, 200 of his apothegms having been translated, 1653, by the missionary, Abraham Roger, in a learned work pub. Nuremberg, under the quaint title, *Open Gates to Hidden Heathenism.*

BHATGAONS, *b'hât-gâ-ŏn':* one of the chief towns of Nepaul, about 9 m. s.e. from Khatmandu. It contains a palace of striking appearance, and other notable buildings. It is the favorite residence of the Brahmans of Nepaul, who form the greater part of its inhabitants. Pop. estimated 30,000; but it is supposed to have once contained 60,000 inhabitants.

BHAVANI-KUDAR, *bhâ-vâ'ne-kô-dâr'*, or BHOVANI-KUDAR: town in the presidency of Madras, dist. of Coimbatoor, 58 m. n.e. of the city of Coimbatoor. It takes its name from is position at the confluence of the Bhavani of Bhovani, and the Cauvery. It is worthy of notice chiefly for its temples of Vishnu and Siva. Pop. about 7,000.

BHAWLPOOR, *bhawl-pôr':* cap. of the protected state of B. in India; on a tributary of the Ghara, which, formed by the junction of the Sutlej and the Beas, falls into the Chenab about 50 m. further down; lat. 29° 24′ n., and long. 71° 47′ e. It has a circuit of 4 m., part, however, of the enclosed space being occupied by groves of trees. B. has manufactures of scarfs and turbans, chintzes and other cottons, and the immediate neighborhood is remarkable fertile in grain, sugar, indigo, and tobacco, with an abundance of mangoes, oranges, apples, and other fruits, in perfection. Much butter is produced. For external commerce, B. is favorably placed, at the junction of three routes respectively from the e., s.e., and s., while towards the n. the Hindu merchants, who are very enterprising, have dealings with Bokhara, and even with Astrakhan. Pop. estimated 14,000.

BHAWLPOOR, the state, lies in lat. 27° 41′–30° 25′ n.; and long. 69° 30′–73° 58′ e., about 15,000 sq. m., with rather more than 38 inhabitants to a sq. m. The country is remarkably level: only about one-sixth is capable of cultivation. The fertile portion, skirting the Ghara and the Indus, has a purely alluvial soil; but the remainder, though presenting many traces of former cultivation and population, is now, from want of water, an irreclaimable desert either of hard dry clay, or of loose shifting sands. Besides beasts of chase, such as tigers, boars, etc., B. abounds in domestic animals, such as camels, kine, buffaloes, goats, and broad-tailed sheep. Principal exports are cotton, sugar, indigo, hides, drugs, dye-stuffs, wool, ghee, or butter, and provisions in general. Principal imports are the wares of Britain and India. In 1866, the state, at the request of the leading men, was taken under British management till the young nabob should be of age. The great majority of the inhabitants are Mohammedans. Pop. (1881) 573,000; (1891) 648,900; (1901) 720,000.

BHEL, or BAEL: see ÆGLE.

BHOOJ, *b'hôj* or *bôj:* cap. of Cutch, in India, situated at the foot of a fortified hill of the same name, where a temple has been erected to the cobra-de-capello; lat. 23° 15′ n., long. 69° 44′ e., about 35 m. from the sea. Its mosques and

pagodas interspersed with plantations of dates, give to the town an imposing appearance from a distance. In 1819 it suffered severely from an earthquake. It is celebrated through India for its manufactures in gold and silver. Pop. 30,000.

BHOPAL, *bo'pawl:* cap. of the territory of the same name, in India; lat. 23° 14′ n., long. 77° 33′ e. It is surrounded by a dilapidated stone-wall 2 m. in circuit. The fort, which is the residence of the nawab, stands on a huge rock outside the town. B. is worthy of notice mainly in connection with two immense tanks in the immediate neighborhood—one of them being 2 m. in length, and the other measuring 4½ m. by 1½. As each sends forth a river, they have probably been formed by the embanking and damming up of their respective streams. Pop. (1901) 77,023.

Bhopal, the territory, is a protected state, under the immediate superintendence of the gov.gen. It is within the basins of the Ganges and Nerbudda; lat. 22° 32′–23° 46′ n.; long. 76° 25′–78° 50′ e.; estimated 6,874 sq. m., with a population of 138 to the square mile. Though the vast mass of the people are Hindus, yet the government is Mohammedan, and is understood to be more popular in its character than any other in India. Pop. (1901) 963,610.

BHOTAN, or Bhutan, *bô-tan':* an independent territory in the n.e. of India, on the s. slope of the Himalayas; lat. 26° 18′–28° 2′ n., long. 88° 32′–92° 30′ e.; bounded on the e. by Assam, on the s. by Bengal, and on the w. by Sikkim. Its area is estimated at 16,800 sq. m., and its population at 250,000. With summits exceeding 22,000 ft., the whole surface may be described as mountainous, with a gradual slope from n. to s. Generally speaking, the middle ranges are most productive. While the s. presents but a scanty vegetation, and the n. rises far above the limit of perpetual snow, the central regions, at an elevation of 8,000 or 10,000 ft. above the sea, are covered with the finest forests of oak and pine. Nearly all sorts of grain—wheat, barley, rice, maize, and buckwheat—are here and there cultivated on favorable spots; but much grain is still imported from Bengal, being obtained, as well as sugar and tobacco, in return for native cloths, rock-salt, rhubarb, Tibet goods, mules, and ponies. The religion is Buddhism, the monastic endowments of its priests absorbing a large part of the national property. The government formerly consisted of a spiritual chief and a temporal chief, but this dual rule came to an end in 1907, when the chief councillor and virtual ruler known as the Tongsa Penlop, was chosen hereditary rajah. The best route from India to Tibet lies through Bhotan. The capital of B. is Punakha.

BHOWAN, *b'ho-wân,* or Bhowany, *b'ho-wâ'nē,* or Bhewannee, or Bhiwani, *bē-wŏn'nē:* town of British India, dist. of Hissar, Punjab, 55 m. w. of Delhi. Pop. (1881) 33,762; (1891) 35,487.

BHUJI, *b'hû'jē*, or Biji, *bē'jē:* small hill-state of India, extending about 20 m. along the left bank of the Sutlej, and about 7 m. at its greatest breadth. Having been overrun by the Goorkhas, it was, on their expulsion, bestowed by the British government on the present family. Pop. abt. 12,000.

BHURTPORE, *b'hŭrt-pôr:* cap. of the protected state of the same name in India; a large town, measuring about 8 m. in circuit; lat. 27° 13′ n., long. 77° 32′ e., 35 miles w. of Agra. It is worthy of notice chiefly on account of its two sieges by the British forces in 1805 and 1827. The strength of the place lay in a mud-wall, practically shot-proof, and a surrounding ditch, which might at any time be filled with water from a neighboring lake. Pop. (1901) 43,000.

Bhurtpore, the protected state, is in lat. 26° 48′–27° 50′ n., long 76° 54′–77° 49′ e.; 1,961 sq. m. The country suffers from want of water, having only three perennial streams, of which two are mere rills in the dry season; yet in many parts the soil is rendered highly productive by means of irrigation. Principal crops are grain, cotton, and sugar. In the height of summer the climate has been compared to the extreme glow of an iron-foundry, the thermometer having been known to stand at 130° F. in the shade. Pop. (1901) 626,000.

BHYSTIE, n., also Bheestie, n. *bēs'tĭ* [Pers. *bhystie*, sent from heaven—from *bhyst*, heaven]: in *India*, a water-carrier; a water-vendor.

BIA, n. *bī'ă:* a Siamese name for the small shells called *cowries* throughout the East Indies.

BI, *bĭ* or *bī*, or Bis, *bĭs* [L. twice]: a common prefix meaning *two, twice, double, in two. Note*—When compounds beginning with Bi are not found, mark the meaning of Bi, and turn to the principal word.

BIAF'RA, Bight of: large bay of the Atlantic Ocean, on the w. coast of Africa, at the head of the Gulf of Guinea, between Cape Formosa (which divides it from the Bight of Benin) on the n. and Cape Lopez on the s. Its extreme width between these two points is nearly 600 m., its depth, to the mouth of the Old Calabar river, about 250 m. The n. shores of the Bight, comprehended under the general name of the Calabar coast, and the e. coast, s. of Cape St. John, are low and flat. Near Old Calabar the country becomes hilly, and opposite Fernando Po it rises into the lofty range of the Cameroons. The principal rivers flowing into the Bight are the Niger, or Quorra, the New and Old Calabar rivers, the Rio del Rey, the Cameroon, and the Gaboon. The creeks and estuaries of the rivers are generally lined with dense thickets of mangrove, which sometimes grow in the water, their lower branches covered with oysters. In the Bight of B. are the three islands of Fernando Po, St. Thomas, and Prince's Island. The chief European stations on the coast are Duke Town, in Old Calabar, where there is a flourishing missionary station, and Naango, or George's Town, a small commercial town on the estuary of the Gaboon.

BIALYSTOK, *be-âl-ĭs-tŏk′:* fortified town of w. Russia, in the gov. of Grodno: on the Biala, an affluent of the Narew, 45 m. s.w. of Grodno; lat. 53° 8′ n., long. 23° 18′ e. B. is well built; lime-trees border several of the streets, and give it a very pleasant aspect. It has a palace and park, now belonging to the municipality, but formerly belonging to the Counts of Braniski, and called the 'Versailles of Poland,' a commodious market, and several churches. It has manufactures of woolens, hats, leather, soap, tallow, etc. Pop. abt. 64,000.

BIANA, *be-ân′â:* town of India, in the Rajpoot state Bhurtpore; anciently of much greater importance than now, and one of the most famous forts in India. The town contains many temples, and the whole ridge of the hill is covered with the remains of large buildings. A high pillar of stone called Bhim Lat, or the *Staff of Bhim,* is conspicuous over a wide extent of country.

BIANCAVILLA, *be-ân′kâ-vil′lâ:* town of Sicily; in the province of, and about 14 m. n.w. of, the city of Catania. It is about 10 m. from Mount Etna, on the s.w. declivity of which mountain it is situated. It has a trade in grain, cotton, and silk. Pop. (1881) 13,021; (1901) 13,358.

BIANCHINI, *be-ân-kē′nē,* Francesco: antiquary and astronomer: 1662, Dec. 13—1729, March; b. Verona, where he received his early education in the Jesuits' College. At Padua he studied theology, mathematics, and above all, botany; and then went to Rome, where he became intimate with the most distinguished *savans* of the day, and studied jurisprudence and foreign languages. Alexander VIII. bestowed upon him a rich benefice, and Clement XI. appointed him. sec. to the commission for reforming the calendar. B. was employed to draw a meridian line in the church of Santa Maria degli Angeli, in Rome, which he successfully accomplished. Besides several memoirs and dissertations on antiquarian and astronomical subjects, may be mentioned his *Istoria Universale Provata coi Monumenti e Figurata coi Simboli degli Antichi* (Rome, 1694), and his fine edition of the work of Anastasius, *De Vitis Romanorum Pontificum,* completed by his nephew Guiseppe B. (4 vols., Rome, 1718–34). A monument was erected to his memory in the cathedral of Verona.

BIANGULAR, a. *bī-ăng-gū′lĕr* [L. *bis, an′gŭlus,* a corner]: having two angles or corners.

BIARD, *be-âr′,* Auguste François: 1798, Oct. 8—1882, June; b. Lyon, France: painter, known in almost every department of his art, but distinguished chiefly for his animated and often comical representations of ordinary life and manners (*peinture de genre*). His countrymen have styled him the Paul de Kock of painting. He was intended for the priesthood, but about 1813 entered the School of Art of his native city. He travelled in early life in Malta, Cyprus, Syria, and Egypt, where he made sketches and stored his memory with images which he used in after-

years. In 1839 he visited Greenland and Spitzbergen, and of this journey one of the fruits was his famous *Combat with Polar Bears*. In 1858–9 he visited Brazil, and in 1865 travelled round the world. The first picture which gave him distinction was his *Babes in the Wood* (1828); and one of his best is the *Beggar's Family* (1836). His picture, *The Wandering Comedians*, is in the Luxembourg. Many continental galleries possess examples of B.'s pictures. He died in Paris.

BIARRITZ, *be-ar-ritz'*: maritime village of France, dept. of the Basses-Pyrénées; about 5 m. s.w. of Bayonne. It was the summer residence of Napoleon III. During the season B. is often visited by 6,000 guests. There are numerous hotels, a great bathing establishment, casino, a number of scattered villas, etc. Pop. 12,000.

BIAS, n. *bī'ăs* [F. *biais*, a slope—from mid. L. *bif'acem*, a two-faced thing, one who squints or looks sidelong: It *sbiescio*, slant, on one side]: a slanting or bending from the straight line; a disposition or leaning of the mind—and also that which causes it; inclination; prepossession: V. to incline to; to prejudice in favor of. Bi'assing, imp. Biassed, pp. *bī'ast*, inclined in favor of. Bias, ad. in *OE.*, obliquely; wrongly; crosswise: Adj. in *OE.*, sloping; out of form.—Syn. of 'bias, n.': bent; inclination; turn; propensity; tendency; proneness.

BIAS, *bi'as*: lived abt. B.C. 570: one of the seven sages of anc. Greece, in the time of the Lydian king, Alyattes, and his son, Crœsus. He was generally employed as a political and legal adviser in difficult questions. At the overthrow of Crœsus, when the Ionians dreaded an invasion by Cyrus, they were advised by B. to take their personal property and colonize Sardinia; but this advice was rejected, and the Ionians, after a vain defense, were subjugated by the generals of Cyrus. When the people of Priene—the birthplace of B.—were making preparations to escape from their besieged city, B. in reply to one who asked why he was not occupied like other citizens, employed the words which have become a Latin proverb, *Omnia mea mecum porto*, 'I carry all my goods with me.' —Orelli, *Opuscula Græcorum Veterum*, etc., 1819.

BIB, v. *bĭb* [L. *bibo*, I drink: Dut. *biberen*, to drink to excess: F. *biberon*, a tippler]: to sip; to tipple. Bib'bing, imp. Bibbed, pp. *bĭbd*. Bibber, n. *bĭb'bĕr*, one who sips or tipples.

BIB, n. *bĭb* [F. *bavon*, a bib; *baver*, to slaver—from *bave*, spittle: Fris. *babbe*, the mouth]: a piece of cloth put on the breasts of children for cleanliness when feeding.

BIB, *bĭb*, or Pout, *powt*, or Whiting Pout, *whīt'ing* (*Gadus luscus* or *Morrhua lusca*): a fish of the same genus with the Cod (q.v.) and Haddock (q.v.), common on many parts of the British coasts, found also on those of Norway Sweden, Greenland, etc. It is of pale olive color, sides tinged with gold, belly white; and is seldom more

than a foot long, but remarkably differs from all other British fishes of the same family (*Gadidæ*, q.v.) in the great depth of its body, which equals at least one-fourth of the entire length. The back is arched, and the nape exhibits a rather sharp ridge. The eyes and other parts of the head are invested with a singular loose membrane, which the fish can inflate at pleasure. There is a dark spot at the origin of each of the pectoral fins, as in the Whiting (q.v.). The names Bib and Pout, both originally local English names, were at one time supposed to belong to distinct species (called *G. lusca* and *G. barbata*), but these appear really one. In Scotland, this fish is generally called *Brassy*. It is well known in the London market, is in best condition in Nov. and Dec., and is much esteemed for the table.

BIBACIOUS, a. *bĭ-bā'shŭs* [L. *bibo*, I drink (see BIB 1)]: given to drinking. BIBACITY, n. *bĭ-băs'ĭ-tĭ*, love for drinking. BIBULOUS, a. *bĭb'ū-lŭs*, drinking in; spongy. BIBIO, n. *bĭb'ĭ-ō*, the wine-fly.

BIBASIC, a. *bī-bā'sĭk* [L. *bis*, two; *basis*, a base]: having two bases—applied to acids which combine with two equivalents of a base; *dibasic* is more correct.

BIBB, GEORGE M., American jurist: b. Virginia, 1772; d. Georgetown, D. C., 1859, April 19. He graduated at Princeton in 1792, and took up the practice of law in Kentucky. He was twice chief justice of the State court of appeals, served two years in the State senate, and was chancellor of the court of chancery. He was a senator in Congress, 1814–19 and 1829–35, and secretary of the treasury under President Tyler. During later life he practiced his profession in Washington, D. C. He compiled *Reports of Cases at Common Law and in Chancery in the Kentucky Court of Appeals* (1808–11), etc.

BIBBS, n. plu. *bĭbz:* in *shipbuilding*, pieces of timber bolted to certain parts of a mast to support the trestle-trees.

BIBERACH, *be'ber-âk:* town of Würtemberg, in the circle of the Danube; on the Reiss, in the charming valley of the same name, about 23 m. s.s.w. of Ulm: surrounded by portions of the old ramparts flanked with towers. It has manufactures of machinery, artificial flowers, leather, children's toys, etc. In 1796, Oct., Moreau won a great victory over the Austrian general Latour at B., the latter losing 4,000 prisoners and 18 pieces of cannon. Here also, 1800, Saint Cyr defeated the Austrian general Kray. B. fell into the possession of Baden, 1802, but four years afterwards was ceded to Würtemberg. Weiland the poet was born in the immediate vicinity. Pop. 8,400.

BIBIO, n. *bĭb'ĭ-ō* [L. *bibio*, a small insect generated in wine]: a genus of dipterous insects belonging to the family *Tipulidæ*.

BI'BIRI—BI'BIRI BARK—BI'BIRINE: see GREEN HEART.

BIBLE, n. *bī'bl* [F. *Bible*—from L. art. Gr. *biblia*, a collection of writings—from Gr. *biblĭon*, a book; see BOOK]. The Book; the Holy Scriptures. BIBLICAL, a. *bĭb'lĭ-kăl*, relating to the Bible. BIB'LICALLY, ad. *bi.* BIBLICIST, n. *bĭb'lĭ-sĭst*, or BIB'LIST, n. one skilled in the knowledge of the Scriptures. See BIBLE, THE.

BIBLE, CANTERBURY REVISION OF THE; or REVISED ENGLISH VERSION OF THE: a revision of the version of 1611 (or King James' Version), which originated in the Convocation of Canterbury, Eng., 1870, May 6, through the appointment of a company of eminent biblical scholars and clergymen of the Church of England, to revise for public use the English version of the Scriptures of 1611, with power to associate with themselves in this work representative biblical scholars or other Christian denominations using that version. The English company accordingly invited the appointment of a similar American committee, to be associated with them, forming one organization, with the same principles and objects, and to be in constant correspondence with them, with the view that both together should issue one and the same revision for all English-speaking people. The two committees appointed, being both for the Old and New Testament, comprised the following:

ENGLISH REVISION COMMITTEE.—*Old Testament.*—The Rt. Rev. Edward Harold, Lord Bishop of Winchester, Farnham Castle, Surrey; the Venerable the Archdeacon of Maidstone, Canterbury; R. L. Beasley, Esq., Gonville and Caius Coll., Cambridge; Frank Chance, Esq., M.D., Burleigh House, Sydenham Hill, S. E.; the Rev. T. R. Cheyne, Tendering Rectory, Colchester; the Very Rev. Principal Douglas, 18, Royal Crescent, Glasgow; the Rev. Dr. D. R. Ginsburg, Holmlea, Virginia Water Station, Chertsey; the Rev. Dr. Kay, Gt. Leghs Rectory, Chelmsford; the Rev. Prof. Lumby, St. Catherine's Coll., Cambridge; the Rev. A. H. Sayce, Queen's Coll., Oxford; Prof. Wright, St. Andrew's Station Road, Cambridge; the Rt. Rev. the Lord Bishop of Bath and Wells, Palace, Wells, Somerset; the Very Rev. the Dean of Canterbury, Deanery, Canterbury; the Rev. Prof. Birrell, St. Mary's Coll., St. Andrews, N. B.; the Rev. Prof. Davidson, New Coll., Edinburgh S. R. Driver, Esq., New Coll., Oxford; the Rev. J. D Geden, Wesleyan Coll., Didsbury, Manchester; the Rev Dr. Gotch, Baptist Coll., Bristol; the Rev. Prof. Leathes, Cliffe Rectory, Rochester; the Very Rev. the Dean of Peterborough, Deanery, Peterborough; the Rev. W. Robertson-Smith, Christ's Coll., Cambridge; W. Aldis Wright, Esq., Trinity Coll., Cambridge. *New Testament.*—The Rt. Rev. Charles Wordsworth, Bishop of St. Andrews, Bishop's-hall, St. Andrews, N. B.; the Very Rev. Principal Brown, Free Church Coll., Aberdeen; the Rev. Dr. Moulton, The Leys, Cambridge; the Venerable the Archdeacon of Oxford; the Rev. Prebendary Scrivener, Hendon Vicarage, N. W.; the Very Rev. Charles John Vaughan, D.D., Dean of Llandaff, The Temple, E. C.; the Rev. Canon Troutbeck, 4 Dean's Yard, Westminster; the Rev. Dr. G

Vance Smith, 5, Parade, Carmarthen; the Right Rev. the Lord Bishop of Gloucester and Bristol, Palace, Gloucester; the Very Rev. the Dean of Rochester, Deanery, Rochester; the Very Rev. the Dean of Litchfield, Deanery, Litchfield; the Right Rev. the Lord Bishop of Durham, Auckland Castle, Bishop-Auckland; the Rev. Dr. Angus, Baptist Coll., Regent's Park, London; the Rev. Prof. Hort, 6, St. Peter's Terrace, Cambridge; the Rev. Canon Kennedy The Elms, Cambridge; the Rev. Prof. Willigan, University, Aberdeen; the Rev. Principal Newth, New Coll Hampstead, N. W.; the Rev. Prof. Roberts, St. Andrews N. B.; the Rev. Canon Westcott, Trinity Coll., Cambridge

AMERICAN REVISION COMMITTEE.—*Old Testament.*—William Henry Green, DD., LL.D. (chairman),Prof. Theological. Seminary, Princeton, N. J.; George E. Day, D.D. (secretary), Prof. Divinity School of Yale Coll., New Haven Conn.; Charles A. Aiken, D.D., Prof. Theological Seminary, Princeton, N. J.; Talbot W. Chambers, D.D., Collegiate Reformed Dutch Church, New York; Thomas J. Conant, D.D., Brooklyn, N. Y.; John DeWitt, D.D., Theological Seminary, New Brunswick, N. J.; George Emlen Hare, D.D., Divinity School, Philadelphia, Penn.; Charles P. Krauth, D.D., LL.D., Vice-Provost University of Pennsylvania, Philadelphia; Charles M. Mead, D.D. Theological Seminary, Andover, Mass.; Howard Osgood, D.D, Professor Theological Seminary, Rochester, N. Y.; Joseph Packard, D.D., Theological Seminary, Alexandria, Va; Calvin E. Stowe, D.D., Hartford, Conn.; James Strong, S.T.D., Theological Seminary, Madison, N. J., C. V. A. Van Dyck, D.D., M.D., Beirut, Syria (advisory member on questions of Arabic). *New Testament.*—Theodore D Woolsey, D.D., LL.D., (chairman), New Haven, Conn.; J. Henry Thayer, D.D. (secretary), Prof. Theological Seminary, Andover, Mass.; Ezra Abbott, D.D., LL.D., Divinity School, Harvard University, Cambridge, Mass.; J K. Burr, D.D., Trenton, N. J.; Thomas Chase, LL.D., President Haverford Coll., Penn.; Howard Crosby, D.D., LL.D., Chancellor University of the City of New York N Y.; Timothy Dwight, D.D., Divinity School of Yale Coll., New Haven, Conn.; A. C. Kendrick, D.D., LL.D University of Rochester, Rochester, N. Y.; Alfred Lee, D.D., Bishop of the diocese of Delaware; Matthew B Riddle, D.D., Prof. Theological Seminary, Hartford, Conn.; Philip Schaff, D.D., LL.D., Union Theological Seminary, New York; Charles Short, LL.D. (secretary), New York; E. A. Washburn, D.D., Calvary Church, NewYork.

These committees commenced operations 1870, June 30, and held their final sitting 1884, June 20, the revision thus occupying 14 years. There were 85 sessions, comprising 792 days of six hours each. The greater part of the sessions were for 10 days each, generally opening on Tuesday in each alternate month and continuing until Friday of the week following. It may be observed that the version of 1611 was carried through in three years (1607–1610).

The committees laid down rules for their guidance, including the following general principles:

1. To introduce as few alterations as possible into the text of the Authorized Version, consistently with faithfulness.

2. To limit, as far as possible, the expression of such alterations to the language of the authorized or earlier versions.

3. That the text to be adopted be that for which the evidence is decidedly preponderating.

4. That when the text so adopted differs from that from which the Authorized Version was made, the alteration is to be indicated in the margin.

5. To revise the headings of chapters, pages, paragraphs, italics, and punctuations.

The labor of this undertaking may be judged from the fact that every sentence had to pass three readings. On the first reading alterations required a bare majority. Special statements of these alterations were then printed and circulated among the members and also submitted to the American revision committee, which had been appointed on the invitation of Convocation, as already stated. Before the organization of the American committee, however, the English revisers had completed the second revision of the Pentateuch, but the American criticisms were before them on proceeding to the final revision, and for the rest of the work before proceeding to the second. On the second revision the invariable rule was applied that no change should be finally made in a text of the authorized version except by two-thirds of the company present and voting, and on the third revision, which was devoted to observations on points in reserve, the same rule was of course rigidly observed. In many cases where the majority, though falling short of two-thirds, was yet impressive, the rendering so preferred was placed in the margin. Besides the marginal readings, all questions of punctuation and divisions into paragraphs, except where these affected the sense, were decided by a similar majority. It is believed that the two-thirds rule tended to a conservative result. The Bishop of Durham, writing about the time when the revisers commenced their labors, said: 'If there be any reasonable grounds for apprehension, the danger is that the changes introduced will be too slight to satisfy the legitimate demands of theology and scholarship.'

The revisers had no alternative but to adhere to the Received or, as it is commonly called, the Masoretic text. This has come down to us in manuscripts of no very great antiquity, and all belonging to the same family or recension; the earliest of which the age is certainly known bears date A.D. 916, and others range from the 12th to the 15th c That other recensions were at one time in existence is a very probable inference from the variations in the ancient versions, which were made, speaking roughly, from B.C. 3d c., to A.D. 4th c., the oldest being the Greek or Septuagint. These versions accordingly refer to manuscripts much older than any now known, and though of unequal value they occasionally show superior readings. The state of present knowledge, however, would not justify any attempt at an entire reconstruction of the text on the authority of the versions, and the revisers, making a virtue of a practical

necessity, prudently contented themselves with the Masoretic text as a basis, departing from it, as the former authorized translators had done, only in exceptional cases. Where these cases presented variations, the revisers selected one reading as the best for translation, placing alternate readings of sufficient probability or importance in the margin. In some few cases of extraordinary difficulty, where they were driven to adopt a reading on the authority of the ancient versions, they notified on the margin the departure from the Received text. Even this slight recognition of the versions of the ancient text is regarded by many scholars as one of the most important features of the Revised version.

The historical books naturally presented the least difficulty, while the poetical and prophetic books, with their poetical style, were extremely difficult to deal with, the translation always tending to assume the form of a commentary. A powerful advantage was derived from the immense advance that has been made in the researches in Hebrew itself and cognate languages, the authorized translators having been greatly aided by the translation of the Hebrew from the Jewish grammarians and lexicographers. This important linguistic study was perhaps of most benefit in the book of Job. The characteristic parallelism of Hebrew poetry was carefully exhibited by an arrangement as in poetic lines. The book of Job was treated as one long poem, the opening and the close standing in prose form. The Psalms, the Proverbs, the Song of Solomon, and the Lamentations of Jeremiah also were set forth in poetic lines, as well as the Song of Miriam, Balaam's blessing of the Israelites, Joshua's adjuration of the sun and moon to stand still, and similar poetic or psalm-like passages wherever occurring The prophetical books, though containing frequent parallelisms, were, excepting purely lyrical passages, treated as prose. The venerable structure of the authorized version was retouched with reverent self-restraint. The revisers stated that they 'have borne in mind that it was their duty not to make a new translation, but to revise one already existing, which for more than two centuries and a half had held the position of an English classic. They have therefore departed from it only in cases where they have disagreed with the translation of 1611 in the construction of a word or sentence, or where it was necessary, for the sake of uniformity, to render such parallel passages as were identical in part, by the same English words, so that an English reader may know at once by comparison that a difference in the translation corresponds to differences in the original, and where the language of the authorized version was liable to be misunderstood by reason of its being archaic or obscure; or finally, where the reading of the English version is made preferable, or where, by an apparent change, it was possible to bring out more fully the meaning of the passage of which the translation was already substantially correct.'

The old division into verses was abolished by the revisers, paragraphs being substituted, but the numbering of the chapters and verses was retained. One consequence of the

arrangement into paragraphs was the omission of the headings of the chapters, 'which for other and more important reasons it was thought advisable to abandon, as involving questions that belong rather to the province of the commentator than to that of the translator.' For the same reasons the head-lines of pages also were swept away.

In regard to the co-operation of the American revisers, their views were accepted or refused on their merits precisely in the same way as the views of the English revisers. All points of ultimate difference between the English and the American companies, however, were placed on record; and in reference to this the English revisers say: 'Many of them will be found to be changes of the English which are involved in the essentially different circumstances of American and English readers; others express a preference for the marginal reading over that given in the text; others again involve a real difference of opinion, but all show that they have been actuated by the same thought and principle—the sincere desire to give to modern readers a faithful representation of the meaning of the original documents.' The acceptance of the new version by the public has been with mingled favor and criticism, as was the case with the King James' Version, which did not gain universal acceptance for nearly half a century after its completion. It is almost universally conceded that in the Old Testament the new version is a distinct and very profitable advance on the old version in nearly all important practical points. In regard to the New Testament there is more reserve in the public judgment, and strong criticism of the English style of the revised version of the New Testament is not lacking. Still the general voice of scholarship declares the New Testament in the revised version to be at least an indispensable commentary on the former version—not always fully acceptable for public use, but of very great value in removing obscurities in the sense, and casting light on points doubtfully or infelicitously expressed in the old version. A demand is rising for a further and more thorough dealing with the work of translation, which shall avail itself, as even the revised version was not authorized to do, of all materials accessible, and of all advances of scholarship. No public or official steps in this direction have yet been taken; nor are such steps known to be in contemplation.

BIBLE, Prohibition of the: one of the main points of opposition between the Rom. Cath. and the Prot. Churches. There is no evidence of any prohibition of Bible-reading by the laity in the earliest times. On the contrary, as the divinely given record of the facts on which the church was built, and as the historical standard of religious knowledge, the reading of the Bible was an essential part of the instruction communicated by pastors to their congregations; and the greatest orators of the Church—especially Chrysostom and Augustine—continually reminded their hearers that private reading and study of the Scriptures should follow attendance on public services This great fact is by no means contradicted by the warnings found, here and there, in the Fathers against abuse or mistake of the meaning of Scripture; instead, these

warnings imply that Scripture-reading was common among the laity. The gradual widening of the distinction, or rather the separation, between the clergy and the laity was the work of the middle ages; and, among other means of preserving traditions inviolate and maintaining the exclusive character and sacred authority of the hierarchy, the B was held in the background, even while there was no direct prohibition of its common use. In 1080, Gregory VII. ordained that Latin should be the universal language of Rom. Cath. worship, and consequently excluded all vernacular readings of Scripture in public assemblies. Again, with regard to the Waldenses, Innocent III., 1199, prohibited the private possession and reading of Scripture (excepting the portions contained in the Breviary and the Psalter) without priestly permission and supervision. Similar prohibitions were repeated at Toulouse (1229), at Béziers (1233), and with regard to Wickliffe, at the synod of Oxford (1383). Ultimately, the recognized Latin version, or Vulgate, was more and more decidedly made the sole authorized Church version. Indeed, as early as 1234, the synod of Tarragona denounced as a heretic any one who, having a translation of the B., refused to surrender it to be burned within the space of eight days. As, however, it soon appeared plain that little could be effected by such prohibitions, milder measures were employed. The Tridentine Council, being required to pronounce on the question of B. translations, purposely employed a word of ambiguous meaning in styling the Vulgate simply 'authentic;' but nothing was determined on Bible-reading among the laity. This was done first in the publication of the first *Index Librorum Prohibitorum* soon after the Tridentine Council. Afterwards, the rules of the church, placing the use of the Scriptures under the supervision of the bishops, were more and more strictly defined. The publication of the New Testament with practical annotations by Paschasius Quesnel (1687), gave occasion to the Rom. Cath. Church to speak more definitely on the reading of the B. by the laity in the bull *Unigenitus Dei Filius*, 1713. New ordinances were issued by Pope Pius VII. in his brief to the Abp. of Gnesen and Mohilew (1816) against translations formerly authorized; again by Leo XII., in his condemnation of B. societies (1824), and by Pius VIII. All these ordinances of the Rom. Cath. church imply that it is dangerous to give the B. freely to the laity, and that, therefore, no vernacular versions ought to be used without interpretations taken from the Fathers, and an especial papal sanction.

BIBLE, The Polychrome: a new translation of the Bible from a revised text, by eminent biblical scholars of Europe and America. The editor is Prof. Paul Haupt of Johns Hopkins University, the occupant of the chair of Semitic languages. The special scheme of the great work is its use of color backgrounds upon which to print the various passages by different writers which have been made up into one work, as, for example, the book of Isaiah and the Psalms. It is based on the general conviction of biblical scholars of undoubted advantage in making clear to the public the full results of modern critical research.

BIBLE, THE: name given by Chrysostom, 4th c., to the collection of sacred writings recognized by Christians as the documents of their divinely revealed religion. Both as regards language and contents, they are divided into two parts—the Old and New Testament, or rather the Old and New Covenant; for the word *testamentum* is a translation into the later Latinity of the 2d c. of the Greek *diatheke,* 'covenant.' The history of the Old Testament is connected with that of the New by a series of writings not received by Protestants as canonical, and collectively styled the *Apocrypha* (q.v.).

The OLD TESTAMENT is a collection of 39 books, written mostly in the Hebrew, and partly in the Chaldaic language, and containing all the remains of Hebrew-Chaldaic literature down to the middle of B.C. 2d c. By an artificial arrangement under the letters of the Hebrew alphabet, the number of books has been limited among the Jews to 22. These writings were spoken of in the time of Christ, and for some indefinite period before his time, as *graphé,* Scripture, or Holy Scripture, or, as 'the Law and the Prophets.' Sometimes the Psalms and the remaining holy writings (*hagio grapha*) are distinctively noticed. The *usus loquendi* of the New Testament (Matt. xi. 13; xxii. 40; Acts xiii. 15; Luke xxiv. 44; etc.) is evidence of this. The Law comprised the Pentateuch, or the first five books. The Prophets were subdivided into earlier and later: the former including the books of Joshua, Judges, Samuel, and Kings; and the latter containing the three great prophets, Isaiah, Jeremiah, and Ezekiel—as well as the twelve minor prophets. The third division of the Old Testament embraced the hagiographa, consisting of the books of Job, Proverbs, Psalms, the Song of Solomon, Ecclesiastes, Ruth, Lamentations, and Esther, together with the books of Daniel, Ezra, Nehemiah, and 1 and 2 Chronicles. With regard to the order of these several books, the Alexandrine translation, the Fathers of the Church, and Luther, on one side, differ from the Jews; again, among the Jews, the Talmudists differ from the Masoretes, while a difference is also found between Spanish and German MSS. Hence have sprung the different arrangements of the books of the Old Testament.

The Septuagint is generally adduced in proof of the existence of these books in a collected form as early as B.C. 285, but an examination of the Aristean fiction (see ARISTEAS and SEPTUAGINT) is sufficient to show that at that period no more than the Pentateuch was translated into Hellenistic Greek. The earliest indubitable notice is found in the prologue to the Alexandrine translation of the book of Jesus, son of Sirach, written by his grandson probably about B.C. 130, which demonstrates that the Law and the Prophets then existed in a collective form; but this language does not prove that the third division was then concluded, though neither does it disprove it. This conclusion is first definitely ascertained from the catalogue given by Josephus, who lived after the middle of the 1st c. of the Christian era,

while Philo, who lived A.D. 41, quotes casually from nearly the whole of them.

As regards the genuineness and authenticity of the Old Testament, there has been much discussion in modern times. The generally received opinion is, that the various books were *originally* written wholly or chiefly by the persons whose names are affixed to them, except Judges (Samuel), Ruth (Samuel), Esther (Mordecai), Kings and Chronicles (Ezra and Jeremiah), and perhaps Job (Moses?); but that these MSS. having perished in the destruction of the first temple, when Nebuchadnezzar took Jerusalem, the members of the Great Synagogue (q.v.)—which included Ezra, Nehemiah, Haggai, Zechariah, Malachi, and afterwards Simon the Just—50 years after the building of the second temple, acting in accordance with a divine commission, rewrote the Old Testament; or rather made a recension of other existing copies, to which were subsequently added the books of Ezra and Nehemiah. Thus the canon was concluded. This was the belief of the Jews themselves at a later period; the *Pirke Aboth* (Sayings of the Fathers), one of the oldest books of the Talmud, as well as other Jewish records, distinctly assert it. It is, however, simply a tradition, and, though possibly true, is necessarily incapable of either demonstration or refutation. In the absence of any direct and conclusive evidence on this point, the contents of the Old Testament have been minutely analyzed by modern German critics, who have attempted to show that they bear internal evidence of having been composed generally at a later period than is ordinarily believed. Their work, since taken up by English, Dutch, and French scholars, of whom perhaps the most notable are Colenso (see NATAL) and Kuenen, has been prosecuted with keenness and vigor. See HIGHER CRITICISM, THE.

The Samaritans, who were at enmity with the Jews, recognized only the five books of Moses, and a corrupt version of the book of Joshua, as canonical. On the other side, the Egyptian Jews, for whom the Alexandrine version of the Old Testament was made, received as canonical several writings which were rejected, or subordinated as apocryphal (see APOCRYPHA), by the Jews of Palestine. The primitive church, in the period which elapsed before the canon of the New Testament was completed, referred to the Old Testament for proof of doctrines; but on account of the prevalent ignorance of the Hebrew and Chaldee languages among the early Christians, the Alexandrine Greek version was the authority employed. As this included the apocryphal books rejected by the Jews of Palestine, the earliest Christian Fathers made the same use of these writings as of the others; but the growth of criticism during the next two centuries was fatal to their reputation, or at least to their authority. We do not find, however, that they were formally designated 'apocryphal' until the time of Jerome (5th c.), though the Greek Church, in the previous century, had approximated to this mode of viewing them, by affirming them to be *not* canonical, but only edifying, and also by issuing lists or catalogues of those books which were

recognized as canonical. In the Latin Church, on the other hand, these writings were received as canonical after the 4th c., though Jerome, Hilarius, Rufinus, and Junilius wished to distinguish them from the canonical books by the name of *libri ecclesiastici.* The Protestants, at the Reformation, returned to the distinction originally made by the Palestinian Jews between the Hebrew Scriptures of the Old Testament and the Apocryphal works included in the Alexandrine version and the Latin Vulgate. Luther, in his translation of the B., included the Apocrypha as 'books not to be placed on a level with the canonical Scriptures; but profitable for reading.' The Council of Trent, which seemed to think that the only safe path for Roman Catholicism to pursue was the exact opposite of that on which Protestantism moved, declared that whoever denied the canonical character of the Apocrypha should be *anathema.*

The New Testament, or the collection of canonical scriptures containing the history and doctrines of Christianity, may be divided into three chief sections: 1. The historical books, or the four gospels, and the Acts of the Apostles. 2. The didactic and pastoral writings, which include the Epistles of Paul to the Romans, Corinthians, Galatians, Ephesians, Philippians, Colossians, Thessalonians, Timothy, Titus, and Philemon, the Epistle to the Hebrews (which does not state the writer's name), the two Epistles of Peter, the three epistles of John, the Epistles of James and Jude. 3. The prophetical section, consisting only of one book, the Apocalypse, or Revelation of St. John the Divine. The primitive Christians referred for proof of doctrine, etc., only, so far as we are aware, to the Old Testament, and quotations from it by the apostolic Fathers are numerous enough; but we find few clear and certain references to the didactic portions of the New Testament. The reason of this appears to be, that the lapse of time had hallowed the Old Testament, and given to it that superior authority which springs from venerable age. The generation which immediately succeeded that of the apostles—and indeed, so far as we can see, the same may be said of the apostles themselves—did not consider the apostolic writing of equal importance *as writings* with the sacred books of the Old Testament. Besides, most of the epistles were of little use in controversy, for the earliest heretics denied the apostleship of St. Paul; while both parties admitted the authority of the Septuagint, and found in it their common weapons of argument. Nevertheless there are occasional references to the didactic portions of the New Testament, such as those to Romans, 1 Corinthians, Ephesians, Hebrews, and James, in Clemens Romanus; to 1 Corinthians, and Ephesians, in Ignatius; to Romans, 1 Corinthians, 2 Corinthians, Galatians, Philippians, 1 Timothy, 2 Timothy, 1 Peter, and 1 John, in Polycarp. Still more uncertain are the references of the apostolical Fathers to the gospels. The notices found in Barnabas. Clemens Romanus, Ignatius, and Polycarp are only sufficient to indicate that all the great facts of Christ's life were known to the churches, and that the doctrinal significance

of these had begun to be realized. Not demonstrating the existence of written gospels, they yet prove that Christianity rests on a historic basis. Their silence in relation to the written gospels now constituting a portion of the canon of the New Testament is, at first sight, surprising; but when it is considered that the facts of the Saviour's life and teaching were apparently quite familiar to the churches—so familiar, indeed, that no explanation was needed in alluding to them—the necessity of the apostolic fathers quoting from the Evangelists disappears. It is contended, that any specific quotations would have been a work of supererogation; whereas, in the case of the didactic epistles, written originally for the benefit of particular churches, and conditioned by their special circumstances, the contents of which, therefore, could not be so well or widely known, quotations or allusions might more naturally be looked for. But evidence of this *negative* character for the existence of the evangelical records, however probable, is very uncertain, and its uncertainty is increased by the use made of writings which, at a later period, were rejected as apocryphal. First, in the second half of the 2d c., more distinct references to the gospel are found in Papias (d. 163), in Justin Martyr (d. 166), in his pupil Tatian (d. 176), in Athenagoras (d. 180), and in Theophilus, who wrote about 180. None of these writers, however, name the authors from whom they quote, though Papias—the earliest, but not the most trustworthy of them—bears direct and minute testimony to the existence of the gospels by Matthew, Mark, John, to the catholic epistles, and to the Apocalypse, whence it has been concluded that the authenticity of the apostolic memoirs was not then settled, and perhaps not even investigated; but anonymous quotation seems to have been a characteristic carelessness of the time, for of this kind are 117 of Justin Martyr's references to the Old Testament. The great fact on which constructive Christian criticism leans in regard to the evidence of these writers is, that they do not speak of the gospels or apostolic memoirs as things which had only recently made their appearance, but as well known and long established. Justin even states that the 'apostolic memoirs' were regularly read in the churches for the edification of believers—a fact which clearly indicates their superior sanctity and general reception. The Tübingen school contend that these apostolic memoirs could not have been the canonical gospels, but must rather have been the primitive evangelical records out of which the canonical gospels were formed; but even the profound and searching criticism of Baur and his followers has not seriously imperilled the claim to apostolic antiquity put forth on behalf of the New Testament Scriptures. See GOSPELS

Nevertheless, the idea of a strict and pure New Testament canon (see CANON) is not discernible in the church in Justin Martyr's time. There is no positive evidence in favor of its existence; but this is not to be wondered at. for the consciousness of freedom in the Holy Spirit, which

filled the Christians of the 1st c.; the opposition of what in continental theology are termed the Petrine and Pauline (q.v.), i. e., the Judaizing and anti-Judaizing parties, which do unquestionably appear to have existed; the still living tradition of the apostles; the difficulty of diffusing apostolic writings sent only to particular churches; the absence of criticism; the vacillation in determining the point where the apostolic men ceased; the use, in divine service, of the Old Testament, and, in particular churches, of casual Christian writings not now looked upon as canonical; all these causes together operated in hindering, till the middle of the 2d c., a formal collection of New Testament writings of any compass or critical value, though it seems quite clear that they existed separately, and were regarded as the most authoritative records of the new dispensation. The earliest trace of such a collection (the ten Pauline Epistles without the pastoral epistles) appears after the middle of the 2d c., in opposition to that gnostic perversion of Primitive Christianity which had been introduced by Marcion of Pontus. The *Muratorian Canon* in the West, and the *Peshito* (q.v.) in the East, both belonging to this period, which has been called the 'Age of the Apologists,' furnish important evidence in regard to the New Testament canon, for both refer to nearly every book now received as authoritative, the exceptions being, in the former, the Epistle of James, the Epistle to the Hebrews, and 2 Peter; in the latter, Jude, 2 Peter, 2 and 3 John, and the Apocalypse. In the close of the 2d, and in the beginning of the 3d c., Irenæus, Clemens Alexandrinus, and Tertullian bear testimony to the recognition of the four gospels, the Acts of the Apostles, the thirteen Pauline epistles, 1 Peter, 1 John, and the Apocalypse, as canonical writings. But they do even more than bear testimony to their recognition—they appeal to antiquity for proof of the authenticity of the books which they used as Christian Scriptures. On this point Tertullian is especially precise, and his most convincing argument on behalf of the 'surety of the gospels' is, that 'the very heretics bear witness to them.' They did not, it is admitted, acknowledge the whole of the New Testament canon, but this is explicable on the hypothesis, which is justified by investigation, that the portions rejected were those that seemed alien to their own opinions. Two distinct collections of writings are now noticed—the *Instrumentum Evangelicum*, containing the four gospels; and the *Instrumentum Apostolicum*, containing the Acts of the Apostles, with the Pauline and other epistles. Respecting several parts of the New Testament canon, differences of opinion prevailed in early times, nor was the war of criticism closed until the 6th c., for considerable difference of opinion existed in regard to the value of the testimony of the early apologetic authors. Origen doubted the authority of the Epistle to the Hebrews, of the Epistle of James, of Jude, of 2 Peter, and 2 and 3 John; while he was disposed to recognize as canonical certain apocry-

phal scriptures, such as those of Hermas and Barnabas, which were decidedly rejected by the church. The Apocalypse was treated as a dubious part of the canon down to the 7th c. The learned and circumspect Father, Eusebius, of Cæsarea, 4th c., in a passage of his *Church History*, distinguishes three classes of New Testament Scriptures: 1. Universally received Scriptures (*homologoumena*), the four gospels, the Acts of the Apostles, the fourteen Pauline epistles, 1 John, 1 Peter, and, with a certain reservation, the Apocalypse of John. 2. Scriptures not universally received, or not received at all. These he calls 'disputed' (*antilegomena*), and subdivides them into such as were generally known and approved by most—viz., the epistles of James, Jude, 2 Peter, 2 and 3 John; and such as were 'spurious' (*notha*)—viz., the Acts of Paul, the Shepherd, the Apocalypse of Peter, the Epistle of Barnabas, the Institutes of the Apostles, and the Gospel of the Hebrews. 3. Heretical forgeries, such as the gospels of Peter, Thomas, Matthias, which Eusebius pronounces to be 'altogether absurd and impious.'

The Western Church, more conservative and less critical than the Eastern Church, completed the canon with greater rapidity. Although the eastern Council of Laodicea (360–364), in determining the canon of the New Testament, excluded the Apocalypse, the western synods of Hippo-Regius (393), Carthage (397), the Roman bishop, Innocent I. (beginning of the 5th c.), and the *Concilium Romanum* under Gelasius I. (494), recognized the entire canon of the New Testament as we find it in the present day. The doubts entertained by individuals respecting some parts of the canon had become exceptional and unimportant at the close of the 7th c. Owing to the want of Greek scholarship, as also, perhaps, to the growing idea of infallibility, there was no criticism worthy of the name during the middle ages. Doubts, therefore, respecting the Epistle to the Hebrews and the Epistles of James and Jude were first revived, after a long rest from controversy, at the time of the Reformation. Erasmus denied the apostolic origin of the Epistle to the Hebrews, 2 Peter, and the Apocalypse. Luther ventured to declare the Epistle to the Hebrews and the Apocalypse 'apocryphal.' Melanchthon, Gerhard, and Chemnitz went in the same direction, and Calvin denied the Pauline authorship of the Epistle to the Hebrews. But biblical criticism, for reasons both political and ecclesiastical, soon became dormant, and so remained for nearly two centuries, when it was revived by a liberal Rom. Cath. writer, Richard Simon (d. 1712), who first conceived the plan of 'an historico-critical introduction' to the B.; afterward, the labors of Lowth, Semler, Herder, Griesbach, Michaelis, Eichhorn, and others, gave a new impulse to scriptural exegesis. In Germany we may name among writers on the conservative and orthodox side, the Rom. Catholic divines Jahn and Hug, with the Protestant writers Hengstenberg, Hävernick, Guerike, Delitzsch, and Caspari: on the other side,

Berthold, De Wette, Credner, Reuss; and since the publication of the *Life of Jesus* by Strauss, the 'New Tübingen school,' with F. Baur (q.v.) at its head, has questioned the authenticity and apostolical antiquity of all the New Testament scriptures, except the four larger Epistles of Paul—to the Romans, the Corinthians (1 and 2), and the Galatians. The critical labors of Ewald (especially on the Old Testament), of Hilgenfeld, and of Keim have exerted important influence.

But, as might have been expected, the effects of the controversy could not always remain confined to Germany. They have been felt more or less over all Protestant countries, England, Holland, and America; and even Rom. Catholic France, which has no theology to contend for, shows the influence of the new movement. Renan (q.v.), who in his *Vie de Jésus* excited a vivid sensation, had followed up his first work by a series of volumes on the early history of Christianity. In England, during the 18th c., several valuable apologetic works were published, such as Lardner's *Credibility of the Gospel History*, and Paley's *Horæ Paulinæ*. In the early part of the 19th c. appeared Horne's *Introduction to the Study of the Scriptures*, frequently reprinted. Since then, Tregelles, Davidson, Westcott, and numerous other scholars, have entered the field; and it is not too much to affirm, that, among the more earnest British and American theologians, there exists at this moment a keener spirit of impartial inquiry, as regards the foundations of biblical criticism, than Britain has ever previously witnessed. The practical tendencies of the Anglo-Saxon mind long restrained it from interfering in what seemed to be a mere maze of unprofitable speculation; but now that its deep and vital relations to the groundwork of men's actual and possible beliefs have begun to be felt, these very practical tendencies are manifestly asserting themselves, and we may confidently anticipate a large measure of attention on the part of both clergy and of laity to this most important branch of knowledge.

Editions of the Bible: History of the Text.—As both the Old and the New Testament were written in ancient languages, and transcribed in times when philological criticism hardly existed, the examination and comparison of various editions, with a view to obtain the greatest possible purity of text, forms an important part of theological study.

Text of the Old Testament.—The first duty of an impartial critic of this question is to lay aside both of the extreme and untenable opinions regarding the Hebrew text of the Old Testament, viz.: 1st, that it has come down to us in an absolutely faultless condition, by miraculous preservation; and 2d, that it has been wilfully and unscrupulously falsified by the Jews. That there are erroneous readings, nobody doubts. The real task devolving on a student of this branch of theological science is to explain these on natural principles, and, by collating the various recensions, to endeavor to obtain a pure text, or as

close an examination as possible. The following is a reasonably complete classification of the causes of errors. 1. Errors arising from *imperfect sight or occasional inattentiveness;* as when transcribers substituted one letter for another similar in appearance, transposed letters, words, and sentences, and omitted the same; of which there are various examples. 2. Errors arising from *imperfect hearing*, of which there are not many examples. 3. Errors arising from *defective memory;* as when a transcriber fancied that he knew certain words, phrases, or clauses, on account of their having occurred before; of these there are occasional examples. 4. Errors arising from *defective judgment;* as when words were wrongly divided, or abbreviations wrongly resolved; also from the *custodes linearum* (i. e., the letters which filled up the occasional vacant space at the end of lines) and marginal remarks being sometimes incorporated with the text. These not unfrequently happen. 5. Errors arising from a *well-meant desire* on the part of the transcriber to explain or amend a text, really or apparently obscure. In this respect the Samaritans are greatly to blame. A very knotty point is, the condition of the text before and at the close of the canon. The opinion of Eichhorn, De Wette, and others is, that while the books circulated singly in a sphere of uncertain authority, they were greatly corrupted; in support of which considerable evidence is adduced, but still the probabilities are, on the whole, against such a supposition, and it is probably better to suppose that the conflicting accounts of the same events which are to be met with, especially in the historical books, arise not from the carelessness or corruptions of copyists, but rather from the original authors or compilers having consulted different documents.

From recent investigations, it appears clear that the strict dogmatic Jews of Palestine and Babylon were generally far more careful in their preservation of sacred records than the Samaritans and the Alexandrines, the latter of whom were remarkable for their free, philosophizing, nontextual spirit. In the schools of learning in Jerusalem at the time of Christ, presided over by Hillel, who had come from Babylon, and Shammai, and in those which flourished elsewhere in Palestine, after the fall of the metropolis, for instance, at Lydda, Cæsarea, Tiberias, etc., as also in the academies of Sora, Pumpeditha, and Nahardea, near the Euphrates, at a later period, the text of the old Testament was defined with great care, first by the Talmudists, who seem to have adhered very closely to the ancient text, and after the completion of the Talmud at the close of the 5th c. by the *Masorites*. See MASSORAH. This care was at first bestowed only on the consonants of the Hebrew text. The Masoretic vowel system, which sprang from that already existing among the Syrians and Arabians, was developed from the 7th to the 10th c. at Tiberias. By the 11th c. it appears to have been completed, while the Spanish rabbis of the next c. seem igno-

rant of its then recent origin. (For proof of this, see Davidson's *Text of the Old Testament Considered*, 1856.) After the 11th c., the Masoretic text, with its perfected system of vowels and accents, became the standard authority among the Jewish scholars. The comparative values of the different readings in the various MSS. had by that time been carefully determined, and the chief business of copyists, henceforth, was to make faithful transcripts.

The earliest printed editions of the Hebrew B. bear a close resemblance to the MSS. 'They are without titles at the commencement, have appendices, are printed on parchment, with broad margin, and large ill-shaped type, the *initial* letters being commonly ornamented either with wood-cut engravings or by the pen. These letters, however, are often absent. With vowels, the editions in question are very imperfectly supplied. Separate parts of the B. were first printed.' The Psalms appeared in 1477, probably at Bologna; the Pentateuch at Bologna, 1482; the Prophets, 1487; the Hagiographa, 1487. To most of these were subjoined the rabbinical commentary of Kimchi. The whole of the Old Testament appeared in small folio at Soncino, 1488, and seems to have been followed by the edition of Brescia (1494); used by Luther in his translation of the Old Testament. The *Biblia Polyglotta Complutensia* (1514–17), the *Biblia Rabbinica* of Bomberg, edited by Rabbi Jacob-Ben-Chajim (Venice, 1525–6), adopted in most of the subsequent editions—the Antwerp *Biblia Polyglotta* (8 vols., 1569–72), also the editions by Hutterus, (Hamburg; 1587, and frequently reprinted), Buxtorf (Basel, 1611), and especially that by Jos. Athias (Amsterdam, 1661–67)—all these are celebrated, and have supplied the basis of later editions by Simon, Hahn, Theile, and others. In the 17th c., a vehement controversy arose regarding the integrity of the Hebrew text; one party maintained that the Masoretic text was greatly corrupted, and contrasted it unfavorably with that of the Samaritan Pentateuch. The chief advocates of this view were Vossius, Whiston, Morin, and Capellus. On the other hand, Buxtorf, Arnold Bootius, Wasmuth, and others, defended the absolute purity of the Masoretic text, even to the inspiration of the vowel-points, which Buxtorf, in the preface to his grandfather's *Tiberius*, gravely asserts to have been first invented by Ezra. This controversy had at least one good result. It led to an extensive examination of Hebrew MSS. in the next c. Kennicott collated 630, 258 of which throughout, the rest in part; De Rossi, 751, of which all but 17 were collated for the first time. Many still remain uncollated. The result of this elaborate investigation has been to convince scholars that the Masoretic text is substantially correct. All known codices confirm it; the oldest of the professedly literal versions, as well as the Targums of the time of Christ, furnish similar satisfactory evidence; and when we consider the *bibliolatrous* tendencies of the Jews *after* their return from exile, whatever may have been the case before, it may be safely concluded

that the text of the Old Testament is now much in the same condition as at the close of the canon.

At first, there were no intervening spaces between Hebrew words; afterwards, small intervals appear to have been occasionally allowed. With the introduction of the *square* character, the use of small interstices to separate words became general. The Talmud prescribes how much space should be between words in sacred MSS. designed for the synagogue. Various divisions according to the sense were also introduced at an early period. In the Pentateuch there were two, termed respectively *open* and *closed*. The former were intended to mark a change in the matter of the text; the latter, slight changes in the sense. Of these, the Pentateuch contained 669, named *parshioth* (sections). The poetical books also were subjected, from a very early period, to a stichometrical division. In order to facilitate the reading and understanding of the prose books, a division into logical periods was also made, mentioned in the *Mishna* (q.v.), while in the *Gemara* (q.v.) its authorship is ascribed to Moses. From it sprang our present division of the Scriptures into verses. It is highly probable that these divisions were long handed down orally. Our present division of the Old Testament into chapters is a later invention, and though accepted by the Jews, is of Christian origin; it may be dated as far back as the 13th c., some assigning it to Cardinal Hugo, others to Stephen Langton, Abp. of Canterbury. It was first employed in a concordance to the Vulgate; whence it was borrowed by Rabbi Nathan in the 15th c., who made a similar concordance to the Hebrew Bible. Nathan's divisions are found in Bomberg's Hebrew B. of 1518. Verses were introduced into editions of the Hebrew B. first by Athias of Amsterdam, 1661, but were employed in the Vulgate as early as 1558. The first *English B.* divided into verses was published at Geneva, 1560.

New Testament.—The original MSS. of the New Testament were all probably written on papyrus, the cheapest, but least durable material that could be obtained for the purpose. It was therefore impossible, considering the constant handling to which the documents must have been subjected by the eager converts, that they could have lasted for any length of time. The number of copies was very great. The text of these, however, did not always agree. Variations originated, to a considerable extent, from the same causes as operated in the case of the Old Testament, viz., imperfect vision or hearing, misunderstanding, carelessness, or an uncritical judgment on the part of transscribers; but it is natural to suppose that, on account of the greater freedom of spirit and thought which characterized primitive Christianity, compared with Judaism, a latitude of conviction in regard to the value of the *letter* of Scripture also influenced the churches. The *idea* of inspiration (q.v.), it is now admitted by the most enlightened theologians, was progressively developed. In the earliest ages it did not exist in any dogmatic form whatever.

Christians were content to believe that the evangelists and apostles spoke *truth*, by the help of the Holy Spirit, without perplexing themselves with the question, whether the words were purely divine or purely human in their origin. They had a gospel to preach, and a world to convert, and were therefore not in a mood to discuss mechanical notions. This also must have operated in producing the textual variations referred to, many of which are of such a nature as to clearly prove that the commentators or transcribers thought themselves at liberty to alter or improve the expression. Nor must the fact be overlooked that the different culture and tendencies of the Eastern and Western churches also caused very considerable changes. Modern criticism reckons no less than 80,000 variations in the existing MSS. Nevertheless, one fact stands out, solid and incontrovertible, amid all the tiny fluctuations of verbal criticism, viz., that, with one or two exceptions, no material difference exists, or in all probability ever did exist, in New Testament MSS. The *general* Christian consciousness, which was the real guardian of their integrity, had been grounded too deeply in the facts, doctrines, and ethics of an historic Christianity to follow in the wake of sectarian or heretical modifications of the truth. It instinctively turned, as it were by a sense of affinity, to those apostolic records, the tone of which most closely corresponded to its own spiritual character and development, and thus unconsciously prevented any incongruous changes from being effected in the mass of MSS. Of these MSS., upwards of 1,400 are known to scholars, and have been collated, and no essential discrepancy has been detected. Of course, it can be urged that all the MSS. belong to a period when the Church had gathered itself up into two great wholes—the Latin and Greek, and when, therefore, a general conformity in MSS., as in other things, is only to be expected; but the fragments which are found in the earliest Church Fathers exhibit substantially, though not verbally, the same text, and we may therefore fairly infer that this unintentional harmony in part argues the general harmony of the earlier and later MSS.

Some slight attempts seem to have been made, during the early history of the Church, to obtain a correct text. One Lucian, a presbyter of Antioch, and Hesychius, an Egyptian bishop, are said by Jerome to have undertaken a recension of the New Testament, and both Origen and Jerome himself were of considerable service in this respect. It is to modern criticism, however, that we owe almost everything in regard to the regulation of the text. Bengel and Semler first started the idea of arranging the MSS. of the New Testament into *families* or *classes*. After these came Griesbach, who, following out the idea, propounded his famous threefold division of the MSS. into Western, Alexandrian, and Byzantine. The first two he considers the oldest; the third, a corrupt mixture of both. Griesbach himself preferred the Alexandrian; he believed that the Byzantine transcribers had taken great liberties

with the text, and held that a few Alexandrian MSS. outweighed, in critical value, a large number of the other. The accuracy of Griesbach's division has subsequently been questioned by many eminent German scholars, each of whom has in turn favored the world with a theory of his own in regard to the probable value of the various families of MSS. Recently, Lachmann has applied, with excessive strictness, a principle first hinted by Bentley, viz., that no weight ought to be attached to any MSS. except those written in the old or uncial (q.v.) character. The exact value of each manuscript is still a matter of dispute; but a great deal has been done to place the knowledge of the various lines of evidence within the reach of all scholars. Tischendorf carefully examined the most important of the uncial MSS., and published them separately somewhat after the fashion of a fac-simile. He also published a fac-simile of the *Codex Sinaiticus*, which he found in a monastery in Mount Sinai. Scrivener has collated a considerable number of cursives, and collated again the *Codex Bezæ*. And great attention is being paid to quotations from the Fathers. Rönsch, for instance, has given all the quotations from the New Test. in Tertullian (q.v.), and Tischendorf (q.v.) made use of them in his last or eighth edition.

The whole of the New Testament was first printed in the Complutensian Polyglott, 1514. From 1516 to 1535, five editions appeared at Basel, under the care of Erasmus, but without any great pretensions to critical accuracy. The subsequent numerous editions were, for the most part, founded on the editions of Erasmus or on the Complutensian, or on a collation of both. Among these editions were those of Simon de Colines or Colinæus (Paris, 1543), of the elder Stephens (1546, '49, '50), of the younger Stephens (1569). Beza was the first who, by several collations founded on the third edition by Stephens, made any considerable progress in the critical treatment of the text, and thus supplied a basis for the present received text (*textus receptus*), which was first printed by Stephens with the Vulgate and critical annotations at Geneva, 1565; afterwards was frequently reprinted by Elzevir (Leyden, 1624) and others. The labors of the English scholar, Walton, in the London Polyglott (1657), of Fell (Oxford, 1675), and especially Mill (Oxford, 1707), were of great importance for the criticism of the New Testament. Bengel exhibited great tact and acumen in his edition of 1734, Wetstein much industry and care in the editions of 1751–2, as also Semler, 1764. But all these recensions were surpassed in value by the labors of Griesbach (1st ed. 1774; 2d and best ed. 1796–1806). The works of Scholz (1830) and Rinck (1830–36), the addition by Lachmann (1831), and the labors of Buttmann (1842–50), are worthy of praise, as are also those of Tregelles (1854–63), Tischendorf (1841–73), and Scrivener (1861). The long-expected edition of the Greek text of the New Testament by Westcott and Hort, with an elaborate introduction, appeared in 1881 (2 vols.), and though it has been sharply attacked by some eminent

critics, has taken the highest place in the estimation of scholars generally.

Among the MSS. of the New Testament, the oldest are not traced back further than the 4th c., and are written in the so-called *uncial* characters. The modern MSS., dating from the 10th c. downwards, are distinguished by the *cursive* characters in which they are written. The most important MSS. are the *Codex Sinaiticus* (at St. Petersburg), the *Codex Alexandrinus* (in the British Museum), *C. Vaticanus* (in the Vatican at Rome), *C. Ephræmi* (in the Imperial Library at Paris), and *C. Cantabrigiensis*, or *C. Bezæ* (given by Beza to the Univ. of Cambridge). On the discovery of the *Codex Sinaiticus* by Tischendorf at the monastery of St. Catharine, Mt. Sinai, 1844 and 59, some deemed it older than even the *Vaticanus;* now, both are usually referred (as by Westcott and Hort, 1881) to the middle of the 4th c. *C. Ephræmi* and *C. Alexandrinus* are probably of the 5th c., as are two fragments. *C. Bezæ* and numerous fragments date from the 6th c.; the 7th c. furnishes but a few fragments. But the MSS. of the 9th and 10th centuries furnish as many as all the preceding ones put together. The *cursive* MSS., numbering nearly 1,000, range from the 9th to the 16th c.

Euthalius (462) arranged those words that were related to each other by the sense into *stichoi* or lines. Subsequently, to save space, a colon or point was substituted, until, finally, a complete system of punctuation arose. In the 13th c., as we have already seen, the division into chapters took place, and in the 16th the versicular division was perfected by Stephens. The arguments or contents prefixed to the several chapters are also of modern origin.

B. Versions or Translations.—These may be divided into ancient and modern. The *ancient translations* of the Old Testament from the original Hebrew may be classed as follows: 1. *Greek.*—The earliest of these is the Alexandrine or Septuagint (q.v.), after which come respectively the translations by Aquila (q.v.), Theodotion, and Symmachus. The whole of these, with fragments of others by unknown authors, were given by Origen in his *Hexapla* (q.v.). The *Versio Veneta*, a Greek translation of several books of the Old Testament, made in the 14th c., and preserved in the St. Mark's Library, Venice, was published by Villoison at Strasburg, 1784. Several early versions were also based on the Septuagint; but for that reason do not possess an independent value, being for the most part only translations of a translation. Among these are the old Latin version or *Italic* (q.v.), though the term *Italic* is strictly applicable to the New Testament only, improved by Jerome (382): the Syriac, including the *Versio Figurata*, partially preserved and collated by Jacob of Edessa, in the beginning of the 8th c.; and that by Paul, Bishop of Tela (617): the *Ethiopic*, made by certain Christians in the 4th c.: the threefold *Egyptian* (3d or 4th c.), one being in the language of Lower Egypt, and termed the *Coptic* or *Memphitic;* another in the language of Upper Egypt, and termed

the *Sahdic* or *Thebaic;* and a third, *Basmuric*, whose locality is uncertain: the *Armenian*, by Miesrob and his pupils in the 5th c.: the *Georgian*, of the 6th c.: the *Slavonian*, commonly ascribed, but for unsatisfactory reasons, to the missionaries Methodius and Cyrillus in the 9th c.: the *Gothic*, ascribed to Ulphilas, and executed in the 4th c., only some few fragments of which are extant: *lastly*, several Arabic translations of the 10th and 11th.—2. The *Chaldaic translations* or *Targums*. These had an early origin; but, with the exception of those of Onkelos and Ben Uzziel, are unsatisfactory from a critical point of view. See TARGUM.—3. The remarkably literal translation into the Aramaic dialect of the later Samaritans, of the ancient copy of the Pentateuch, possessed by the Samaritans (see SAMARITAN PENTATEUCH).—4. The Church translation, known as the *Peshito* (q. v.), received by all the Syriac Christians. It was undoubtedly executed from the original Hebrew text, to which it closely adheres. Several Arabic versions were founded on the *Peshito*.—5. The later Arabic versions, executed during the middle ages, partly from the Hebrew text, and partly from the Samaritan Pentateuch.—6. The Persian translation of the Pentateuch made by a Jew named Jacob, not earlier than the 9th c. —7. The Latin Vulgate (q.v.), from which a considerable number of fragmentary versions were made into that form of English commonly called Anglo-Saxon, the most noted translators being Aldhelm, Bishop of Sherborne, and Bede (8th c.); Alfred (9th c.); and Ælfric (10th c.).

Among ancient versions of the New Testament may be noticed three in Syriac: the first is the *Peshito*, with a twofold secondary translation of the four gospels into Arabic and Persian. It does not, however, contain 2 Peter, 2 and 3 John, Jude, or the Apocalypse, which, at a later period, were classed among the *antilegomena*, or disputed books. The second, or *Philoxenian*, prepared 508, under the direction of Philoxenius, Bishop of Hierapolis. It no longer exists, but a counterpart of it does, in the translation made in the following century (616) by Thomas of Harkel or Heraclea, successor of Philoxenius. The best MS. of this version is one which belonged to Ridley, and is now in the archives of the New College, Oxford. It includes all the books of the New Testament excepting the Apocalypse. The style is slavishly literal. It was edited by White, Oxford, 1778. The third, or Jerusalem-Syriac version, preserved in a Vatican MS., and, according to the subscription annexed to it, executed at Antioch 1031. With the above Syriac version we may class the Ethiopic translation; the Egyptian threefold version, made probably in the latter part of the 3d c., and of considerable critical value; the Armenian, Georgian, Persian, and Coptic-Arabic. Besides these may be mentioned the old Italic; the Vulgate by Jerome; the Gothic translation by Ulphilas (about the middle of the 4th c.), of which the most famous MS. is preserved in the library of Upsala, in Sweden (this has only the four gospels, and not even these in perfect

condition); the various Anglo-Saxon versions already mentioned in connection with versions of the old Testament; and the Slavonic.

Modern Translations.—During the middle ages, when the laity were considered by the priesthood unable to understand the B. as a whole, various poetical versions—such as the Gospel History, by Otfried von Weissenburg, and the version of Job and of the Psalms by Notker-Labeo (980)—served a very important object, and stimulated the desire for more biblical information. As early as 1170, Petrus Waldus caused the New Testament to be translated into the Provençal dialect by Etienne d'Anse. This important work was followed by the translations made under King Louis IX. (1227) and Charles the Wise (1380), the B. Histories ((*Bible ystorieus*) by Guyars of Moulins (1286), the Spanish version under Alfonso V. in the 13th c., the English by Wicliffe, and the Bohemian version of John Huss. After the invention of printing—especially after the latter part of the 15th c.—the harbingers of a new ecclesiastical era appeared in numerous republications of the translated B.—the Bohemian (Prague, 1448); the Italian, by the Benedictine Nic. Malherbi (1471); the French, by Des Moulins (1477–1546); the Dutch (Delf, 1477); the Spanish (1478–1515); but, above all, in the seventeen German translations before Luther, of which five were printed before 1477, and the remainder in the Low-German dialect during 1477–1518.

Luther's translation of the B. is universally esteemed by the best German scholars as a masterpiece of genial interpretation. It has qualities far superior to those ordinarily expected in a translation—deep insight, true sympathy with the tone of the Hebrew Scriptures, and a perfect command of clear, popular language; indeed, every one who can thoroughly appreciate the merits of this great work will be ready to excuse the boldness of the assertion—that 'it was rather a re-writing than a mere translation of the B,' a transfusion of the original spirit into a new language, rather than a mere version of the letter. The New Testament was finished by Luther at Wartburg, and appeared 1522, Sept. In the following year, the five books of Moses appeared; and, 1534, the remaining part of the Old Testament canon was completed with the Apocrypha. With wonderful rapidity, this translation was circulated throughout Germany. In forty years, one Wittenberg bookseller sold 100,000 copies. It was reprinted thirty-eight times in Germany before 1559, and meanwhile the New Testament had been printed seventy-two times. Numerous other translations in Dutch, Swedish, etc., were based upon the work of Luther.

English Translations.—As above mentioned, portions of the B. were translated into Anglo-Saxon by Aldhelm, Egbert, Bede, and others between the 8th and 10th c. An English version of the Psalms was made 1290. Wicliffe (q. v.), founding on the labors of predecessors, finished his noble version of the New Testament from the Vulgate

1380, and completed the Old (begun by Nicholas and Hereford) a little later. Revisions of this translation by Purvey and others were widely circulated in MSS. But long after Germany had printed vernacular versions of parts of Scripture England had none. The seven penitential psalms were apparently printed 1505. William Tyndale (q.v.), vowed that 'if God would spare his life, ere many years he would cause the boy who driveth the plough to know more of the Scriptures than did all the priests.' To accomplish his purpose, he passed over to the continent. Before 1526, he had completed an English translation of the New Testament, which appeared both in quarto and duodecimo. Of the admirable character of his translation, we have a sufficient testimony in this fact, that in the version of 1611, in common use, known as King James' version, a very large portion of the New Testament is taken almost *verbatim* from Tyndale's Testament. Tyndale next proceeded to prepare a version of the Old Testament out of the original Hebrew, and in 1530 he published the Pentateuch, and in the following year the book of Jonah. The first English version of the whole B. was that published by Miles Coverdale, a friend of Tyndale. It is dated 1535, and dedicated to Henry VIII., but where printed, is unknown. It is much inferior to Tyndale's. The next English B. issued was called *Matthew's B.*, from the circumstance that the editor assumed the name of Thomas Matthew, but was simply Tyndale's version revised by his friend John Rogers, who also translated those books in the Old Testament which the martyr had not been able to overtake. It was finished 1537, and Cranmer obtained for it the patronage of Henry, though that monarch put Tyndale to death in 1536. Matthew's B. soon superseded Coverdale's. In 1539, April, appeared the *Great B.*, usually called Cranmer's because he wrote a preface to it. It was a large volume for use in churches. The text was Tyndale's revised. In the same year, Richard Taverner, a learned but eccentric layman belonging to the Inner Temple, published an edition, the text of which is based on that of Matthew's Bible. In 1557 appeared the famous *Geneva B.*, so called because the translation was executed there by several English divines, who had fled from the persecutions of Queen Mary. Among these were Gilby and Whittingham. This edition—the first printed in Roman letter and divided into verses—was accompanied by notes, which showed a strong leaning to the views of Calvin and Beza. It was, in consequence, long the favorite version of the English Puritans and the Scotch Presbyterians. It is, however, best known as the *Breeches B.*, on account of the rendering of Genesis iii. 7: 'Then the eyes of them both were opened, and they knew that they were naked, and they sewed fig-tree leaves together, and made themselves *breeches.*' In 1568, the *Bishops' B.* was published at London. The text of this was compared with the original by eight bishops, and seven other scholars of reputation.

who appended their initials to their respective tasks, the whole being under the superintendence of Matthew Parker, Abp. of Canterbury. In 1582 appeared at Rheims, in France, an English version of the New Testament, prepared by several Rom. Cath. exiles; and in 1609–10, a similar version of the Old Testament at Douay. Both were taken from the Vulgate, and form the standard English Scriptures of the Rom. Catholics, being generally known as the *Douay Bible.*

We now come to the version which has been in common use for nearly 250 years, generally called *King James' Bible.* At the Hampton Court Conference, 1604, Jan., Dr. Rainolds, an eminent Puritan, suggested a new translation as a great national want; and this, though opposed by the Bishop of London, was sanctioned by the king. Arrangements were at once made for carrying out the project. In July, the king wrote a letter, intimating the appointment of 54 scholars for the preparation of the version, and instructing the bishops that whenever 'a living of twenty pounds' became vacant, they should inform his majesty of the circumstance, in order that he might recommend one of the translators to the patron. This was all that James did on behalf of the translation which bears his name. The expenses seem to have been borne by Barker, the printer and patentee, who paid the sum of £3,500. Of the 54 scholars who had been nominated to the work, only 47 undertook it. These were divided into six companies, two of which were to meet at Westminster, two at Cambridge, and two at Oxford. The *first* company at Westminster translated the Pentateuch and the historical books to the end of 2 Kings; the *first* at Cambridge, from the beginning of Chronicles to the end of Canticles; and the *first* at Oxford undertook the remaining books of the Old Testament canon. The second company at Westminister translated the apostolic epistles; the second at Cambridge, the Apocrypha; and the second at Oxford, the gospels, the Acts of the Apostles, and the Apocalypse. According to Selden, 'they then met together, and one read the translation, the rest holding in their hands some B., either of the learned tongues, or French, Spanish, Italian, etc. If they found any fault, they spoke; if not, he read on.' When a portion was finished by one of the company, it was sent to all the others in succession for their deliberative examination; and whenever a difference of opinion was elicited, reference was made to a committee. The final revision of the whole was conducted in London by two delegates from each of the six companies. These twelve scholars, in the discharge of their critical functions, met daily for nine months in the old hall of the Stationers' Company. The work of translation and revision occupied from 1607 to 1610. The superiority of the authorized version soon proved itself; for though there were several rivals in the field, and no steps were taken to secure for it a preference, it quickly gained the foremost place, and in the course of forty years from its publication all others had quietly succumbed to it; it became, and has since re-

mained, *the English Bible.* Its ascendency, and its exclusive use among all classes in Britain and its colonies, and in the United States, can be traced only to its intrinsic excellence. A Revision Company, pursuant to appointment in the convocation of Canterbury, 1870, May 6 (to which a company of American Revisers was subsequently added), commenced its labors 1870; and the New Testament was issued in Britain and America 1881, the Old 1885. See BIBLE, CANTERBURY REVISION OF THE.

The exclusive right to print the present authorized version has, in Britain from the first, been claimed by the crown; and only under this royal prerogative the B. is printed in different forms, and sold wholesale by certain patentees and licensees, in England, Scotland, and Ireland. This claim, which does not practically affect Bibles with notes, has lately been much remonstrated against as a monopoly injurious to the free circulation of the Scriptures at a moderate price, and a modification is now looked for (see BOOK-TRADE). In the United States, the publication is free.

The more liberal Rom. Catholics—especially the Jansenists De Sacy, Arnauld, and Nicole; the enlightened Richard Simon and Quesnel—also shared in the common zeal for diffusing a knowledge of the Scriptures; but though many versions have been prepared by Rom. Catholics, the Roman Church has consistently maintained an opposition to the general circulation of Holy Scripture without ecclesiastical comments.

The numerous recent translations of the Scriptures into languages beyond the pale of Christendom have been executed chiefly under the auspices of missionary and Bible societies (q.v.).

As to the *contents* of the B., its one grand object, under whatever form it may appear in the various books, is, to give an account of this world, both in its origin and government, as the work of an Almighty Creator, always and everywhere present; and especially to exhibit the relation of man to this Creator, and, in consequence of that relation, in what manner, and with what hopes he ought to live and die—subjects undeniably the most momentous that can occupy human thought. The sacred books of other religions all have an analogous aim; to account, namely, for the origin of all things, and to explain the nature and human relations of that something *divine,* which it is an instinct of the human mind to conceive as actuating and controlling all that moves. But so different—so immeasurably superior to all other sacred books is the B. in the conception which it unfolds of the Divine Being as one personal God, exercising towards men the love and care of a parent to his offspring, and in the system of human duties springing therefrom, that on this consideration alone many rest its claim to being received as a direct revelation from heaven. For the questions regarding the B. considered in this point of view, see INSPIRATION: REVELATION. For the leading features of the doctrines and precepts, as a system, see CHRISTIANITY: for the chief individual doctrines, see their respective titles, and the accounts of the controversies to which they have given rise.

BIBLE SOCIETY: an association having for its object the diffusion of the sacred Scriptures. A long period elapsed after the Reformation before a B. S. was formed; though there had been extensive diffusion of the Scriptures. Probably the first assoc. for this sole and specific purpose was founded by Baron Hildebrand von Canstein, an intimate friend of Spener, in conjunction with Francke at Halle, and which, to 1834, when other Bible societies had begun to be established in Germany, had distributed 2,754,-350 copies of the Bible, and about 2,000,000 copies of the New Testament.—The impulse, however, to the formation of the Bible socs. now existing in all parts of Protestant Christendom proceeded from England, where, 1780, an assoc. was formed for distribution of Bibles among soldiers and sailors; at first simply called *The B. S.*, now known as the *Naval and Military B. S.*, and confining itself to its original specific object. In the beginning of 1792, a similar assoc. was formed in London, the *French B. S.*, with a similar specific object of distributing Bibles in the French tongue. Its funds and all its property, being in Paris, were lost or destroyed during the tumult of the Revolution.

In 1802 the first steps were taken toward the formation of the BRITISH AND FOREIGN B. S., the parent of a multitude of similar institutions. It was organized 1804, Mar. 7. Its origin is traceable to the casual discovery by a minister in Bala, Wales, of a little girl in that town who was weeping because, after saving her earnings for some years to buy a Bible, she had walked 25 miles to procure one, only to find that the last one had been sold. This incident becoming widely known, revealed the need of an organization for supplying Bibles, not only in Wales, but wherever destitution existed throughout the world. The society was constituted on the widest basis, churchmen and dissenters being alike included; and soon attained its place by the side of the other two great religious societies, the *London Missionary Society* (see MISSIONS), and the *Religious Tract Society* (q.v.). formed a few years before. It was able to expend only £691 (about $3,450) in its first year; but its income gradually increased until it amounted to more than $1,000,000 annually. Auxiliary and branch societies and dependent associations rapidly sprang up in all parts of Britain, and in the colonies, the number of which is now 5,000—6,000. Until within recent years the society was prohibited by its rules from printing any but the authorized, or King James, version; but a change in its constitution now permits it to publish the Revised Version also; it prints and circulates the Scriptures also in the Celtic languages spoken in Great Britain and Ireland, and a very important branch of its operations has been the printing of translations prepared by missionaries. It has issued about 370 complete or partial translations of the Scriptures—many in languages possessing no previous literature: annual issue now about 6,000,000 copies; total issue to 1909, 215,535,000 copies. The question having arisen as to including the books of the Apocrypha, the soc. formally resolved against it.

The AMERICAN B. S. is, in the magnitude and importance of its operations, next to the British and Foreign Bible Society. It was founded at New York, 1816, and has its headquarters in that city in the '*Bible House*,' a large and commodious building, erected by special subscription. It reckons fully 7,000 auxiliary societies, in all parts of the United States. Its income now amounts to about $700,000 a year, rather more than one-half being derived from sales of Bibles and Testaments, and the rest from donations, collections, etc. Since its organization it has distributed more than 80,000,000 volumes, and its total expenditures have exceeded $30,000,000. For some years its efforts were confined chiefly to the United States, where many volumes were circulated among the Indians and destitute whites, but during recent years its work has extended largely into foreign countries. 'The Bible Association of Friends in America,' founded at Philadelphia, 1829, has also distributed the Bible extensively.

THE AMERICAN AND FOREIGN BIBLE SOCIETY was founded in Philadelphia (1837), by a convention of Baptists, whose purpose was to prepare and circulate translations of the Scriptures in which the Greek words *baptismos* and *baptizo* should be not transliterated into 'baptism' and 'baptize,' as in the 'authorized English version' of the Amer. Bible Soc., but translated into 'immersion' and 'immerse.' This action had reference to translations into foreign languages for missionary work—the new soc. continuing to circulate the 'authorized English version.'

THE AMERICAN BABLE UNION was formed 1850 by Baptists dissatisfied with the policy above noted, and aiming to extend the same principle to the Eng. version also. The Union energetically promoted an excellent revision of the Eng. Bible on their principles, by Thomas J. Conant, D.D.

The two socs. were merged into the AMERICAN BAPTIST PUBLICATION SOCIETY 1883. Their revised New Test. has been published, and the revision of the Old Test. was proceeding under the supervision of Dr. William R. Harper, pres. of Chicago Univ., at the time of his death.

Of the numerous Bible socs. of Germany, the most important and extensively ramified is the Prussian Central B. S. (*Hauptbibelgesellschaft*), Berlin. It was founded 1814, has branches in all parts of the Prussian dominions, and distributes annually about 35,000 Bibles and 14,000 New Testaments. There are numerous independent Bible socs. in other parts of the German empire. Bible socs. were prohibited by the Austrian govt. 1817, and some which had already been established in Hungary were dissolved.—The RUSSIAN B. S., founded at St. Petersburg, 1813, through the exertions of Dr. Patterson, and under the patronage of the emperor Alexander I., entered upon a career of great activity and usefulness, co-operating with the British and Foreign B. S. for the printing of the Scriptures in the numerous languages spoken within the Russian dominions; but its operations were suspended, 1826, on the accession of the emperor Nicholas, its stock of Bibles and the whole con-

cern, being transferred to the *Holy Synod*, under the pretense that the sacred work of supplying the people with the Holy Scriptures belonged to the Church, and not to a secular society. The Bibles and Testaments in stock were indeed sold, and very large editions were thus disposed of, but the activity of a society which had no equal in continental Europe was at an end. A Protestant B. S. was then formed for the purpose of providing editions of the Scriptures, and circulating them among the Protestants of all parts of the empire, which now reckons about 300 auxiliary societies. But the action of this society 'does not touch the members of the Greek Church, or, if at all, only slightly and incidentally, and it makes no provision of the Scriptures in the language spoken by the great mass of the people. It is merely designed to meet the wants of the colonists and others, who do not use the Russian language.'

The 93rd annual report of the American B. S. (1909) shows receipts during the year, $607,132; and at its close a cash balance of $13,381. The invested funds were increased by gifts and legacies of $76,167.48, bringing the total of such funds up to $809,000; only the *income* from these funds can be expended for the purposes of the society; the *income* from this source during the year was $30,116. The total issues of the year at home and abroad amounted to 2,153,028 vols., viz., 1,190,228 from the Bible House in New York, and 962,800 from the society's agencies abroad, printed at mission presses in China, Japan, Siam, Syria, and Turkey. The total issues in 93 years were 84,649,351 copies. The domestic circulation of the Scriptures by the society during the year was 1,010,235, including the circulation in Porto Rico and the Philippines. In the U. S. the Scriptures are circulated in sixty-five languages through seven agencies. The translation of the sacred books into the various insular dialects is progressing satisfactorily. In the year 1901 the society established an agency among the negro population of the south, with headquarters at Atlanta, Ga. The report notes the avidity with which the negroes read and study the Scriptures, and their readiness to pay something for the Bibles and Testaments.

The centenary of the foundation of the British and Foreign society was celebrated in London, 1904, March 7, and the report presented on that occasion showing the situation and work of the society in its hundredth year was published. During that year the number of copies of the Bible, complete or in parts issued was nearly 6,000,000; the number of copies sold by colporteurs was 1,830,000. The Bible has been translated under the society's auspices into 370 distinct languages or dialects; in Russia alone agents of the society sold copies in 53 different tongues. As one mode of commemorating the centenary the society issued the new English version or revision, in four editions, one of these editions at the

marvelously low price of 8 cents (4d.) for the N. T., and 20 cents (10d.) for the complete Bible.

BIB'LIA PAUPERUM, *paw'per-ŭm*, or Bible of the Poor: a sort of picture-book of the middle ages, giving, on from forty to fifty leaves, the leading events of human salvation through Christ, each picture being accompanied by an illustrative text or sentence in Latin. A similar and contemporaneous work on a more extended scale, and with the legend or text in rhyme, was called *Speculum Humanæ Salvationis*, i. e., the 'Mirror of Human Salvation.' Before the Reformation, these two books were the chief text-books used, especially by monks, in preaching, and took the place of the Bible with the laity, and even with the clergy; and as the lower orders of the regular clergy, such as the Franciscans, Carthusians, etc., took the title of 'Pauperes Christi,' Christ's Poor, hence the name. Many manuscripts of the *B. P.*, and of the *Mirror of Salvation*, several as old as the 13th c., are preserved in different languages.

BIBLICAL ANTIQUITIES, or Biblical Archeology: a study which has for its objects the social and political constitution, the manners, customs, geography, etc., of the Jews and other peoples mentioned in the Scriptures. A knowledge of these is essential to a right understanding of many passages of Scripture. The antiquities of the ancient Jews themselves undoubtedly form the most important part of such a study; but an examination of the laws, customs, etc., of the neighboring Semitic nations is likewise indispensable. The principal sources of such knowledge are the Old and New Test.; the books of Josephus on *Jewish Antiquities* and the *Wars of the Jews;* the writings of Philo, the Talmud and Rabbinical works; and, lastly, Greek, Roman, and Arabian writers, with medals, monuments, and other works of art, the accounts of travellers, etc. The first work on Hebrew archeology was Thomas Goodwin's *Moses et Aaron, seu Civiles et Ecclesiastici Ritus Antiquorum Hebr.* (Oxford, 1616). German works on the subject are those of the handbooks by Jahn, Bauer, Rosenmüller, DeWette, Ewald, Saalschütz, Roscoff, and Keil; and the biblical dictionaries of Winer (1848), Schenkel (1875). Convenient works of reference for English readers are Dr. Kitto's *Cyclopædia of Biblical Literature*, and his *Pictorial Bible;* Smith's *Dictionary of the Bible*, and *Dictionary of Christian Antiquities;* Thomson's *Land and the Book*

BIBLICAL CRITICISM: see Higher Criticism.

BIBLICAL PSYCHOLOGY: the doctrine of man's constitution on the basis of the Biblical doctrines. The most important problem with which it deals is that of the determination of man's nature as composed of soul and body, or spirit, soul and body. The Greek and Latin fathers for the most part took opposite views on this question, the former generally holding the last theory. For many centuries interest in the problem was small. Recently there has been occasional renewal of discussion.

BIBLIOGRAPHY, n. *bĭb'lĭ-ŏg'ra-fi* [Gr. *biblĭŏn*, a book: *grapho*, I write]: the knowledge and history of books, especially of rare and curious ones. BIBLIOGRAPHER, n. *bĭb'lĭ-ŏg'ra-fer*, one who is skilled in the knowledge and history of books. BIB'LIOGRAPH'IC, a. *-grăf'ĭk*, or BIB'LIOGRAPH'ICAL, a. *-ĭ-kăl*, pertaining to the history of books. BIBLIOLATRY, n. *bĭb'lĭ-ŏl'ă-trĭ* [Gr. *latreï'a*, worship]: book-worship, especially applied to an extreme reverence for the Bible. BIBLIOLATRIST, one who idolizes books; one who idolizes the Bible. BIBLIOMANCY, n. *bĭb'-lĭ-ō măn'sĭ* [Gr. *manteï'ă*, prophecy]: divination by the Bible. BIBLIOLOGY, n. *bĭb'lĭ-ŏl'ŏ-jĭ* [Gr. *logos*, discourse]: a treatise on books; biblical literature or theology. BIB'-LIOLOG'ICAL, a. *-ĭ-kăl*, pertaining to. BIBLIOMANIA, n. *bĭb'lĭ-ō-mā'nĭ-ă* [Gr. *manĭă*, madness]: a rage for the possession of rare and curious books. BIB'LIOMA'NIAC, n. *-nĭ-ăk*, one who has a rage for books. BIBLIOPEGY, n. *bĭb'lĭ-ŏp'ĕ-jĭ* [Gr. *pēgnumi*, to make fast]: the art of binding books. BIBLIOPHILE, n. *bĭb'lĭ-ō-fĭl* [Gr. *philos*, friend]: a lover of books. BIBLIOPOLIST, n. *bĭb'lĭ-ŏp'ŏ-lĭst*, and BIB'LIOPOLE, n. *-pōl* [Gr. *polĕō*, I sell]: a bookseller BIBLIOTHECA, n. *bĭb'lĭ-ŏ-thē'kă* [Gr. *thēkē*, a case or box]: a repository for books; a library. BIB'LIOTH'ECAL, a. *-kăl*, pertaining to.

BIBLIOGRAPHY, *bĭb-lĭ-ŏg'ra-fĭ:* the knowledge, history, and proper classification and cataloguing of books. It is derived from *bibliographia*, which was employed by the Greeks to signify the transcription of books, while *bibliographos* was merely a copyist. The introduction of the term in the meaning now attached to it may be dated from the appearance of the first vol. of De Bure's *Bibliographie Instructive* in 1763. The bare enumeration of the works on this branch of literature would more than fill an ordinary volume.

A favorite dream of bibliographers has been the production of a general catalogue, embracing the whole range of printed literature; and one attempt at least has been made to realize it. In 1545, Conrad Gesner published at Zurich, in one folio vol., his *Bibliotheca Universalis*, in which are described, under the names of the authors, arranged alphabetically, all the books in the Hebrew, Greek and Latin languages about which the compiler could obtain information. This restriction as to language, of course, does away to some extent with the idea of universality indicated by the title-page; still, as the three which are included were in Gesner's time almost the only ones employed by men of learning, his work may be regarded as a nearly complete account of the state of printed literature as it then existed. One other effort in this direction is the *Bibliotheca Britannica* of Dr. Robert Watt, four vols. 4to (Edinburgh, 1824). The following is an extract from the preface: 'The account given of British writers and their works is universal, embracing every description of authors, and every branch of knowledge and literature. What has been admitted of foreign publications, though selective, forms a very considerable and valuable portion

of the work, and as none of note have been purposely omitted, the *Bibliotheca Britannica* may be considered as a universal catalogue of all the authors with which this country is acquainted, whether of its own or of the continent.' This great work was compiled under very adverse circumstances, and its author did not live to see it through the press. It thus labors under all the disadvantages of a posthumous publication; but with all its faults both of omission and commission, which are neither few nor small, it maintains a high character as a work of reference, and is indispensable to the library of every bibliographer.

The other laborers in this field of literature have confined themselves within narrower limits. Some, proceeding upon a principle of selection, endeavor to furnish the inquirer with the information which he seeks in regard to books which are rare, curious, or valuable; others aiming at greater completeness within certain bounds, restrict themselves to the description of a special class of works—the literature, for example, of a particular country or language; the productions of a celebrated press; the books published within a given period; those of which the authors have withheld their names, or have veiled them under a pseudonym; the treatises on a specific subject; and so on, together with a few which hardly admit of classification, but may be shown by examples.

Bibliographical works on the selective principle form a numerous class; the following are among the more important: Vogt, *Catalogus Historico-criticus Librorum Rariorum*, 8vo (Francofurti, 1793). This is the fifth edition; the four preceding appeared successively at Hamburg in 1732, '38, '47, '53. David Clement, *Bibliothèque Curieuse, ou Catalogue raisonné de Livres difficiles à trouver*, 9 vols. 4to (Göttingen, 1750–60). The expression *catalogue raisonné* is usually, but erroneously, applied in this country to classified catalogues; yet the work of Clement, who was the son of a Frenchman, and certainly understood the language in which he wrote, is arranged alphabetically. It is simply what it professes to be, a descriptive and methodized account of the books which it includes; but unfortunately it was never completed. It terminates with the article 'Hesiodus,' and the seven or eight vols. required to finish it have not been published. The *Bibliographie Instructive* of De Bure, already mentioned, extends to seven vols. 8vo, the last of which appeared 1768. To these should be added the *Catalogue des Livres de Gaignat*, 2 vols. 8vo (Paris, 1769), and the *Table destinée à faciliter la Recherche des Livres Anonymes*, 8vo (Paris, 1782). Ebert's *Bibliographisches Lexicon*, 2 Bde. 4to (Leip. 1821–30), is an accurate and useful work. It has been translated into English, 4 vols. 8vo (Oxford, 1837). Lowndes's *Bibliographer's Manual* contains an account of rare, curious, and useful books, published in or relating to Great Britain, from the invention of printing, and may always be consulted with advantage. It appeared originally in 4 vols. 8vo (Lond. 1834): but a new edition, with many improvements, has since been published (1857–64) in 11 parts or 6 vols.,

under the editorship of Mr. H. G Bohn. One of the most interesting and important works in this department of B. is the *Manuel du Libraire et de l'Amateur des Livres* of J. C. Brunet, of which it is hardly possible to speak in terms of too high commendation. It was first published 1810, in 3 vols. 8vo; and the fifth edition, in 6 vols. 8vo (Paris, 1860–65), is now out of print. The sixth vol. contains a valuable classed catalogue, the only modern effort of this kind. Another work of a similar but somwhat more extensive character, entitled *Trésor des Livres Rares et Précieux*, by J. G. T. Graesse, was published at Dresden, in 7 vols. 4to (1859–69). In it more attention has been given to the northern literatures than in Brunet. To these may be added the amusing and instructive bibliographical works of the Rev. Dr. Dibdin.

Turning to special B., and taking its subjects in the order given above, we have to notice first the works which confine themselves to the literature of a particular country or language. As regards Great Britain, besides Watt and Lowndes, already mentioned, there are the *Typographical Antiquities* of Ames and Herbert, 3 vols. 4to (Lond. 1785–90.) A new and improved edition was projected by Dibdin, but was not completed. Vols. 1 to 4 only have appeared, 4to (Lond. 1810–19). A recent contribution to English B. is the *Critical Dictionary of English Literature and British and American Authors*, by S. A. Allibone, 3 vols. 8vo (Philadelphia, 1859–71)—a work of much labor, and covering a wide field, but lacking in exactness: it faithfully reproduces most of the errors of Watt, with the addition of not a few for which the compiler is responsible. French bibliophiles possess a treasure in *La France Littéraire* of J. M. Quérard, but it embraces only the 18th and 19th c. The continuation, begun by Quérard, afterward carried on by Louandre and Bourquelot, forms 6 vols. 8vo (Paris, 1846–57). A further continuation by Lorenz, *Cat. Général de la Librairie Française pendant 25 ans* (1860–65, 4 vols. 8vo, Paris, 1867–71), brings the work down to a recent date. For the literature of Italy may be noticed Gamba's *Serie de' Testi*, 4th ed. (Venice, 1839); and for that of Spain, the *Bibliotheca Hispana Vetus*, and the *Bibliotheca Hispana Nova* of Antonio, the latest and best editions of which appeared at Madrid (1783–88) in folio. The authors of the Low Countries are enumerated in the *Bibliotheca Belgica* of Foppens, 2 vols. 4to (Brussels, 1739); and those of Scandinavia in the *Almindeligt Litteraturlexicon for Danmark, Norge, og Island*, of Nyerup and Kraft, 4to (Copenhagen, 1820). For Germany, are Heinsius, *Allgemeines Bücherlexicon*, with supplements (10 vols. 4to, 1812–49), and Kayser's *Vollstündiges Bücherlexikon* (1750–1882; Leip. 1833–83). To this class also belong the *Bibliotheca Græca*, *Bibliotheca Latina*, and *Bibliotheca Latina Mediæ et Infimæ Ætatis* of Fabricius; Harwood's *View of the various Editions of the Greek and Roman Classics;* and Moss's *Manual of Classical Bibliography*. The Oriental student will find much to interest him in the *Lexicon Bibliographicum* of Haji Khalfa, edited in the

original Arabic, with a Latin translation by Fluegel, 7 vols. 4to, 1835–58.

Of works descriptive of the productions of particular presses may be noticed Renouard's *Annales de l'Imprimerie des Alde* (3d ed., 8vo, 1834); the *Annales de l'Imprimerie des Estiennes*, by the same author (8vo, Paris, 1837–8); and Bandini, *Juntarum Typographiæ Annales*, 2 vols. 8vo (Luccæ, 1791). The student may also consult with advantage the *Notice de la Collection des Auteurs Latins, Français, et Italiens Imprimés en petits Formats par les Elzeviers*, at the end of the 5th vol. of Brunet's *Manuel*.

The bibliographers who have confined themselves to books printed within a given period are chiefly Panzer, *Annales Typographici ab Artis Inventæ Origine ad Annum MD* (continued, however, to 1536), 11 vols. 4to (Norimbergæ, 1793–1803); and Hain, *Repertorium Bibliographicum*, 4 vols. 8vo, 1826–38. The death of the author before the completion of this work was the cause of the comparative inaccuracy observable in the 3d and 4th vols. The article 'Virgil,' for example, is omitted altogether.

One of the earliest attempts to reveal the authorship of anonymous works was the *Theatrum Anonymorum et Pseudonymorum* of Vincent Placcius, folio (Hamburg, 1708); to which Mylius added a supplement, 1740. So far as France is concerned, these both have been superseded by the admirable and well-known *Dictionnaire des Ouvrages Anonymes et Pseudonymes* of Barbier, 2d ed., 4 tom. 8vo (Paris, 1822–27). Italy has the *Dizionario di Opere Anonime e Pseudonime di Scrittori Italiani* of Melzi, 3 vols. 8vo (Milano. 1848–59). Mr. Ralph Thomas's (Olphar Hamst) *Handbook of Fictitious Names* (1868) is a slight but useful production. A very copious and valuable work is the great *Dictionary of the Anonymous and Pseudonymous Literature of Great Britain* (vol. i., 1881), begun by Mr. Halkett, keeper of the Advocates' Library, Edinburgh, and continued by the Rev. John Laing. To this branch of B. belong Weller's *Maskirte Literatur der älteren und neueren Sprachen;* Toinsot's (G. Heilly) *Dictionnaire des Pseudonymes* (1867); and De Manne's *Nouveau Dictionnaire* (1868). The best guide to periodical literature is the *Co-operative Index to Periodicals*, formerly known as *Poole's Index*.

Bibliographies which describe treatises on special subjects are very numerous; the following may be noticed: Lipenius, *Bibliotheca Realis Theologica*, 2 vols. folio (Francofurti, 1685); *Bibliotheca Philosophica*, 1682; *Bibliotheca Medica*, 1679; *Bibliotheca Juridica*, 1672—a new ed. of the last of these was pub. at Leipsic, 1757, and supplements have been added successively by Scott, Senkenberg, and Madihn —Marvin's *Legal Bibliography*, 8vo (Philadelphia, 1847); Orme's *Bibliotheca Biblica*, 8vo (Edin. 1824); Fürst's *Bibliotheca Judaica*, 8vo (Leip. 1849–51); Vater, *Litteratur der Grammatiken, Lexica und Wörtersammlungen aller Sprachen der Erde*, 2te Ausg. von B. Jülg, 8vo (Berlin, 1847); Upcott's *Bibliographical Account of the Principal Works relating to English Topography*. 3 vols. 8vo (Lond. 1818)

Oettinger's *Bibliographie Biographique Universelle*, 8vo (Bruxelles, 1854); *The Literature of Political Economy*, by J. R. M'Culloch, 8vo (Lond. 1845); *Arithmetical Books from the Invention of Printing to the Present Time*, by Augustus de Morgan, 12mo (Lond. 1847); the *Biographia Dramatica*, by Baker, Reed, and Jones, 3 vols. 8vo (1812); the *Bibliotheca Anglo-Poetica* (1815). Note also Van Praet's *Catalogue des Livres Imprimés sur Vélin*, 9 vols. (1828); Peignot's *Dictionnaire des Livres condamnés au Feu* (1806); and Martin's *Bibliographical Catalogue of privately printed Books.*

Petzholdt's *Bibliotheca Bibliographica* (1864) is a bibliography of bibliographies. For modern English literature, the most readily available guides are Sampson Low's *English Catalogue* of books from 1835 onwards; Whitaker's *Reference Catalogue of Current Literature;* the *American Catalogue;* with the lists in the *Bookseller* (Brit.) and the *Publisher's Weekly* (Amer.), and similar issues.

BIBLIOMANCY, *bĭb'li-o-măn-sĭ* [Gr. *ta biblia*, the Bible, and *manteia*, divination]: a mode of divination much practiced during many ages, by opening the Bible, and observing the first passage which occurred, or by entering a place of worship and taking notice of the first words of the Bible heard after entering it. The application was often very fanciful, and depended rather upon the mere sound of the words than upon their proper signification, or the scope of the passage. Prayer and fasting were sometimes used as a preparation for a mode of consulting the divine oracles, than which nothing could be more contrary to their purpose and spirit, and which was in harmony only with the notions and practices of heathenism. B. was prohibited, under pain of excommunication, by the Council of Vannes, 465, and by the Councils of Agde and Orleans in the next c. It continued, however, to prevail for many centuries thereafter, and is said to have been introduced into England at the Norman Conquest. It was essentially the same as the *Sortes Virgilianæ*, the only difference being in the book employed.

BIBLIOMANIA, *bĭb'li-o-mā'ni-a:* the passion for rare and curious books, extensively manifested during the last century. While the ordinary collector is satisfied with the possession of works which are valuable either on account of their established reputation, or as assisting him in his literary or professional pursuits, the bibliomaniac is actuated by other motives. With him utility is of secondary importance, rarity being the first and great requisite. Thus even a common book becomes valuable in his eyes, if it be one of a few copies thrown off on vellum or on large paper, or if bound by Derome, Bozerian, Lewis, or Payne; and for the same reason, he sometimes prefers an inferior to a better article. The fac-simile reprint of the Giunta edition of Boccaccio's *Decameron* (Florence, 1527) fetches hardly as many shillings as the original does pounds, yet the great distinguishing difference between them is, that the former is the handsomer and more correct of the two.

The formation of complete sets of such books as the Elzevir editions (see ELZEVIR), or of the works of a single author, provided they be scarce, is a favorite pursuit with many. The editions of the classics most prized by collectors are those of the Elzevirs and of the Foulises (q.v.). The original editions of Defoe's numerous productions are eagerly sought for at present.

B. reached a hitherto unknown height at the sale of the library of the Duke of Roxburghe, 1812. Among the treasures which that library contained, was the only perfect copy, known to exist, of the first, or at least the first dated, edition of Boccaccio's *Decameron* (Venice, Christ. Valdarfer, 1471). After a spirited competition with Lord Spencer, this volume was purchased by the Marquis of Blandford for the sum of £2,260. When the collection of the marquis came under the hammer in 1819, Lord Spencer secured this precious tome at the more moderate cost of £918, 15s. In 1885, Mr. Quaritch, bookseller, gave £3,900 for a Mazarin Bible, and £4,950 for the *Psalmorum Codex* printed by Fust and Schöffer in 1459. The same purchaser gave £1,950 at the Osterley Park sale for *La Mort d'Arthur*, printed by Caxton in 1485.

One of the results of the Roxburghe sale was the establishment of the Roxburghe Club, the object of which was to reprint, for the use of the members only, works hitherto unedited, or of extreme rarity. The example thus set was speedily followed by the Bannatyne and Maitland clubs in Scotland, and others in other parts of the kingdom.

BICAMERAL, a. *bī-kăm'ĕr-al:* consisting of two legislative chambers.

BICANERE, or BEEKANEER: see BIKANIR.

BICAPSULAR, a. *bī-kăp'sū-lĕr* [L. *bis*, twice, and *capsular*]: in *bot.*, having two seed-capsules to each flower.

BICARBONATE, n. *bī-kär'bō-nāt* [L. *bis*, twice, and *carbonate*]: a salt having two equivalents of carbonic acid to one equivalent of a base. BISULPHATE, n. *bī-sŭl'fāt*, constituted as preceding—and many other similar formations in *bi*.

BICARINATE, a. *bī-kăr'ĭ-nāt* [L. *bis*, twice; *cărīna*, the bottom of a ship, the keel]: in *bot.*, two-keeled.

BICAVITARY, a. *bī-kăv'ĭ-tĕr-ĭ* [L. *bis*, twice; *cavĭtātem*, hollowness—from *cavus*, hollow]: having two cavities.

BICE, n. *bīs* [OF. *bis*, gray; *bes*, in composition, being often employed to signify perversion or inferiority]: an inferior blue; two pigments of a blue and green color respectively, known to artists from the earliest times —Blue B. as *mountain blue, ongaro, azzuro di terra*, etc.; and green B. as *chrysocolla, Hungarian green, verde de Miniera, verde de Spagna, verdetto*, etc. Green B. is now usually called *malachite green* and *mountain green*. Both are native carbonates of copper, but are also prepared artificially. In its native state, however, B. is more durable, and in the case of mountain green especially, much more brilliant. Artificial blue B. is known as

Hambro' blue, mineral blue, etc.; artificial green B., as mountain green, Paul Veronese green, and emerald green.

BICEPS, n. *bī'sĕps* [L. *biceps*—from *bis*, twice; *caput*, the head]: double-headed; in *anat.*, applied to certain muscles that divide into two portions—especially to the great flexor of the fore-arm, which gives a full appearance to the front of the arm. Above, it consists of two portions or heads—whence its name—one being attached to the coracoid process of the scapula, the other to the margin of the depression on that bone which lodges the head of the humerus. The former is the short, the latter, the long head of the biceps. They unite to form a fleshy belly, which terminates in a rounded tendon.

The B. tendon is inserted into the tubercle of the radius (see ARM). Before passing to this insertion, it gives off an expansion, which separates the median basilic vein from the brachial artery in the situation generally selected for venesection. The action of the B. is to bend the fore-arm, and also to supinate the hand. BICIPITAL, a. *bī-sĭp'-ĭ-tăl*, or BICIPITOUS, a. *bī-sĭp'ĭ-tŭs*, having two heads; or BICEPHALOUS, a. *bī-sĕf-ă-lŭs* [L. *bis*, twice: Gr. *keph'al?* the head]: double-headed.

BICÊTRE, *bē-sāt'r:* originally the name of a very old castle, on a little eminence near Paris, commanding one of the finest views of the city, the Seine, and the environs. In 1632 it was destroyed, because it had become a hiding-place of thieves. Afterward, it was rebuilt by Louis XIII., and made a hospital for old soldiers. When Louis XIV. had built the *Hôtel Royal des Invalides*, the B. was made a civil hospital for septuagenarians. It was for a long time used also as a prison for criminals, mostly those condemned to the galleys, but is now occupied entirely as a hospital for indigent old people and for incurable lunatics. There is a well sunk in the rock to the depth of 183 ft.

BICHAT, *be-shâ'*, MARIE FRANÇOIS XAVIER: 1771, Nov. 11—1802, July 22; b. Thoirette, dept. of Ain, France: eminent anatomist and physiologist. He studied chiefly in Paris under Desault, who adopted him as his son, and whose surgical works he edited. In 1797, he began giving lectures on anatomy, with experimental physiology and surgery, and in 1800 was appointed physician in the Hôtel-dieu. Two years later he fell a victim to intense and unremitting labor, before he had completed his thirty-first year. He was the first to simplify anatomy and physiology by reducing the complex structures of the organs to the simple or elementary tissues (q.v.) that enter into them in common. This he has done in his *Anatomie Générale* (2 vols. Par. 1801, often reprinted). In his *Recherches Physiologiques sur la Vie et la Mort* (Par. 1800), he develops another luminous idea—the distinction between the organic and the animal life. His discoveries mark an epoch in biology.

BICKER, n. *bĭk'ĕr* [Scot: Dut. *bickeler*, a stone-picker;

W. *bicra*, to bicker, to skirmish]: in *Scot.*, a fight between two parties of boys by throwing stones and using sticks. V. to quarrel; to fight without a set battle; to contend in words. BICK'ERING, imp. BICKERED, pp. *bĭk'ėrd*. BICKERMENT, n. *bĭk'ėr-mĕnt*, in *OE.* a quarrel.

BICKER, n. *bĭk'ėr* [Ger. *becher*, a cup, a goblet]: in *Scot.*, a bowl, or wooden dish.

BICKERN, n. *bĭk'ėrn* [corrupted from *beak-iron*]: a small anvil, with a tang, which stands in a hole of a work-bench.

BICKERSTAFFE, *bĭk'er-stăf*, ISAAC: b. Ireland, abt. 1735: author of numerous comedies and light musical pieces produced under Garrick's management, which had great popularity. He became page to Lord Chesterfield, who was made lord lieut. of Ireland, 1746. B. afterward became an officer of marines, but was dismissed the service for some discreditable offense. Nothing is certainly known regarding his after-life, nor the time of his death, which seems to have taken place on the continent. His best-known pieces are, *The Maid of the Mill; The Padlock; He would if he could; Love in a Village; The Hypocrite;* and *The Captive.*

BICKERSTETH, *bik'er-steth*, EDWARD: 1786, Mar. 19—1850, Feb. 24; b. Kirkby Lonsdale, Westmoreland, Eng.: clergyman of the Church of England. He commenced life as a post-office clerk; afterward, having served an apprenticeship to a London attorney, established a lucrative solicitor's business in Norwich. Here he soon became so impressed with the importance of religious truth, that he resolved to devote himself to the ministry. Being admitted to orders, he was sent by the Church Missionary Soc. to reorganize their mission stations in Africa, and, on his return, was appointed sec. to the society, in which office he was noted for energy and devotion. In 1830, he resigned on acceptance of the rectory of Watton, Hertfordshire. He was active in almost every work for the spread of religious truth. B. belonged to what is known as the Evangelical section of the Church of England, and opposed the endowment of Maynooth, and the spread of Tractarianism in his own church. He was one of the founders of the Evangelical Alliance. Of his religious writings—16 vols. (Lond. 1853)—the most popular are, *A Help to the Study of the Scriptures* (written before he was ordained), *The Christian Student*, and *A Treatise on the Lord's Supper*. B. also edited *The Christian Family Library*, 40 vols.

B.'s son, EDWARD HENRY B., D.D., b. 1825, was appointed Bp. of Exeter; wrote *Yesterday, To-day, and Forever;* etc.

BICKMORE, ALBERT SMITH: an Amer. naturalist; b. 1839; studied under Agassiz. He traveled in the Malay Archipelago and in Eastern Asia in 1865–69; became Prof. of Natural History at Madison (now Colgate) University 1870; and was made prof. in charge of the Department of Public Instruction at the American Museum of Nat-

ural History, New York city, 1885. His publications include *Travels in the East Archipelago, The Ainos or Hairy Men of Jesso, Sketch of a Journey from Canton to Hankow*, etc.

BICUSPID, a. *bī-kŭs'pĭd* [L. *bis*, twice; *cuspĭdem*, the point of a spear]: in *anat.*, applied to teeth that have two tubercles; in man the two premolars on each side; in *bot.*, leaves that end in two points; two-pronged.

BICYCLE, n. *bī'sĭk-l* [L. *bis* twice: F. *cycle;* Gr. *kulos*, a circle]: light two-wheeled vehicle, a form of velocipede. As the wheels are placed in line, one behind the other, the machine acquires and retains its stability in the erect position only in motion. The B. is now essentially what it was when Pierre Lallement 1866 took out the U. S. patent for it, i.e., two wheels of nearly equal size, one behind the other, the motive power of which is transmitted to pedals on the axle by the alternate pressure of the feet of the mounted rider. Its intermediate transformations have been numberless; but the 'safety' B. of to-day seems likely to be its permanent form. On the 'safety' the rider is placed between the two wheels astride of a rigid, strong, diamond-shaped frame connecting the two similar sized wheels, and the power of his feet pressure on the alternate pedals is transmitted to the hind wheel by gears and a chain linked from the axle of the cranks to and around the axle of the hind (the driving) wheel. This frame distributes the pressure of the rider's weight and divides the functions of driving and steering betwixt the two wheels. In Lallement's the pressure was mainly on the axle of the front wheel, which was also both the driver and steerer. The diamond frame and the adoption of tangent wheel-spokes, ball-bearings at the axles, tough steel, and the covering of the wheels with India rubber inflated with air, as in the pneumatic tires, are the main improvements effected. Road-riding bicycles are 17 to 25 lbs. in weight.

Wood is often substituted for steel in the construction of the wheel-rims and handle-bars: it reduces the weight. Chainless bicycles, in which two pairs of bevel gears are used instead of the chain, are said to have proved their superiority over the chain-geared B. in a test, in which a wheel was run 39,000 miles without adjustment or appreciable wear. Dynamometer tests show that the bevel gears run with less friction than chain gears. These wheels have been put on the market and proven quite popular.

In the United States the 'safety' was not manufactured till after the Centennial Exposition, when some English machines were imported and exhibited. Col. Albert A. Pope of Boston saw them and thought of reviving the business here; went to England to study the industry, brought back some English wheels, and had W. S. Atwell of Boston build him one, weighing 70 pounds, and costing $313. Again visiting England, he decided that conditions here warranted their manufacture for the market, and in 1878 had the Weed Sewing Machine

Company, of Hartford, Conn., make some 'Columbias' for him in a corner of their shop, the first bicycles made in America. The 'safety' brought the same expansion here as elsewhere; but its very commonness and cheapness, with other causes, has, since about 1895, produced a severe decline. The slackening of this demand produced a severe crisis in the business. Also, inventions have nearly reached their limit, to tempt youth with money to buy the latest new pattern; and the business has settled upon a firm though more limited basis of practical service and every-day pleasure.

The B., as an aid to military evolutions, is in use in the U. S. army, also in many of the European armies and in the Japanese. B. police patrol are in service in most of the large cities.

B. riding, while dangerous in affections of the aortic valves, is often of great service in uncomplicated mitral disease. Of course it must be riding in moderation. Hill climbing and fast riding are preemptorily excluded, as is also riding which causes an approach to breathlessness. The great point for the beginner in such cases is that he should spend adequate time and money in preliminary tuition, and not be in too great a hurry to be 'off on his own account.'

In cases of breakdown of the nervous system from overwork and anxiety, cycling will be found a valuable adjunct to the rest necessary for recovery. Many sufferers from sick headache, neuralgia, and hysteria, both male and female, have reaped much benefit from regulated B.-riding, and many cases of so-called palpitation have been cured. Insomnia has frequently been found to yield to the proper use of the B. when every other soporific had been defied, and many cases of persistent nocturnal cramp have been relieved. It is necessary, however, again to warn every one who is not an experienced rider against the abuse of this fascinating exercise. See CYCLING: WHEELMAN'S ASSOCIATIONS. TRICYCLE, n. *trī'sĭk-l* [*tris*, three and *cycle*]: a vehicle somewhat resembling the bicycle, but having three wheels, variously arranged, and propelled in the same way: it holds one or two persons.

BID, v. *bĭd* [AS. *beodan;* Ger. *bieten*, to offer; Dut. *bieden*, to put forth]: to wish; to desire; to invite; in *OE.*, to pray; to offer; to bring forward. BADE, pt. *băd.* BIDDEN, or BID, pp. *bĭd'n.* BIDDING, imp. *bĭd'dĭng:* N. an invitation, an order. BID'DER, n. one who offers a price. BID, n. *bĭd*, an offer at an auction. BIDABLE, a. *bĭd'ă-bl*, that may be bidden; obedient; submissive. BID THE BANNS, to bring forward to public notice the purpose of a marriage. BID BEADS [AS. *bede*, a prayer]: to mark or distinguish each bead by a prayer; to repeat prayers. BID FAIR, to offer or show good promise of success. BID WELCOME, to offer welcome. BID DEFIANCE, to offer defiance. *Note.*—BID [AS. *biddan;* Dut. *bidden*, to pray]: to pray, as in the

reduplication *bidding a prayer*, that is 'praying a prayer'; and BID [AS. *beodan;* Goth. *biudan*, to command]: to command, are two distinct words. Their meanings, however, have become so intermingled that it has been judged better to allow them to stand as one entry; see BIDDING PRAYER.—SYN. of 'bid, v.': to call, invite; summon; request; offer; propose; proclaim; direct; enjoin; command.

BIDASSOA, *be-dâs-so'â:* river which, rising in Spain, forms the boundary between that country and France, and falls into the Bay of Biscay at Fuenterabia. The treaty of the Pyrenees was concluded on an island in its mouth, 1659. The B. was the scene of several conflicts during the Spanish campaign. In 1793, the Spanish crossed the river, and defeated the French in three successive encounters. In July of the following year, the French captured the intrenched camp of the Spaniards. In 1813, Aug., the French under Soult were defeated at San Marcial, on the B., by the allies; and in Oct. of the same year, Wellington surprised and drove the French from their strongly fortified positions on its n. side.

BIDDEFORD, *bĭd'de-ford:* city of York co., Me.; on the right bank of the Saco river 6 miles from the sea, and on the Boston & Maine R. R., 15 miles southwest of Portland. The leading industries include the manufacture of cotton goods, lumber, boots and shoes, machinery, etc. Here are some of the most important cotton mills in New England. Near the city are granite quarries which annually produce large quantities of superior stone. Several thousand people are employed in the city's industries. It has two national banks. The public school system is well organized and conducted, and the various religious denominations are represented by 14 churches. There is an excellent public library. The city was named from Biddeford, England, the home of some of its settlers. In 1616 a small settlement was made at Biddeford Pool, near the mouth of the Saco, and Biddeford was settled under a patent in 1630, embraced Saco until 1718, and was then incorporated under its present name. This was long the chief settlement of the Maine province. In 1855 Biddeford received a city charter. The present government includes a mayor and a city council, elected annually. Pop. (1910) 17,079.

BIDDING PRAYER: a form of exhortation, always concluding with the Lord's Prayer, enjoined by the 55th canon of the Anglican Church, 1603, to be used before all sermons and homilies. Except in cathedrals and the university churches, it is now seldom used. The term 'B.' is from the Saxon 'Bede,' signifying a prayer. The form is of extreme antiquity, and a similar one is in the Apostolical Constitutions (q.v.), the original of which was probably that used in the Church of Antioch. It was anciently used for the communicants or believers after the dismissal of the catechumens, and was pronounced by the deacon,

each petition beginning with the words: 'Let us pray for ——,' and the people responding at the end of each with 'Kyrie Eleison,' or some such words. There is another very ancient example in the Ambrosian Liturgy; and St. Chrysostom alludes to such a form in one of his sermons. It must have been, and even now in its abridged shape still is, very impressive, allowing each individual to supply from his own thoughts special cases of necessity under the different heads. There is some resemblance between these Bidding Prayers and the Litany, and prayer for the church militant, now used in the Anglican Church.

BIDDLE, *bĭd'dl*, CLEMENT: military officer: 1740, May 10—1814, July 14; b. Philadelphia. He was a member of the Society of Friends; nevertheless he led a company of Quakers against an attack on Philadelphia by a band of outlaws called 'Paxton boys.' In 1775 he helped form a company of Quaker volunteers, and was present at important battles in Penn. and N. J. After the revolution he was politically prominent, was appointed U. S. marshal of Penn. by Washington 1787, and was attached to the expedition against the Whisky Insurrection.—His son CLEMENT CORNELL B. (milit. officer: 1784, Oct. 24—1855, Aug. 21), served in the war of 1812 as capt. and col., and afterward became an authority in political economy, and a prominent advocate of free trade.

BID'DLE, JAMES: naval officer: 1783, Feb. 28—1848 Oct. 1; b. Philadelphia. He became a midshipman 1800, and was on the frigate *Philadelphia* when she ran ashore at Tripoli 1803. After release from the captivity which followed, he continued in the naval service; 1812 was on the sloop-of-war *Wasp* when she captured the *Frolic*, and took charge of the prize, but was captured by the British 74, *Poictiers*. He was exchanged, promoted to master commandant 1813, and commanded the *Hornet* in her successful engagement with the British brig *Penguin* 1815, Mar. 23 He was promoted to post-capt., and congress voted him a gold medal. B. acted for the United States in the Oregon boundary question under the treaty with Great Britain 1818, and negotiated a commercial treaty with Turkey 1826. He was gov. of the naval asylum at Philadelphia 1838–42, flag officer of the E. India squadron 1845, when he negotiated the first treaty with China; and commanded on the Pacific coast during the Mexican war.

BIDDLE, *bĭd'dl*, JOHN: 1615–62, Sep.; b. Wotton-under-Edge, Gloucestershire: founder of English Unitarianism. In 1632, he entered Magdalen College, Oxford, where he took his degree of M.A. In 1641, he was elected master of the free school in the town of Gloucester, where he did good service; but having embraced certain opinions—printed for private circulation—in regard to the personality of the Holy Spirit, at variance with those held by the majority of Christians, he was thrown into jail, 1645, Dec. Summoned to trial before the parliament at Westminster, on account of his heresy, he was condemned to imprisonment for five years. The famous Westminster Assembly

of Divines undertook to 'settle' B.'s case, but unfortunately their arguments—as is usual in disputation—had the effect only of strengthening his previous convictions. In 1648, while still in prison, he published a *Confession of Faith concerning the Holy Trinity*, etc., which was followed by another tract containing the opinions of the Church Fathers on the same question. In consequence of this attempt to combat the orthodox doctrine, the Westminster Divines called upon the parliament to pass an act declaring the denial of the Trinity a crime punishable by death. The *army*, however, strange to say, proved on this occasion less cruel than the *church*, for it manifested such strong opposition that the act remained a dead letter; and under the liberal rule of Cromwell, B. was released. He now commenced to gather a congregation of those whom he had converted to his opinions—namely, that there was but one person, as there was but one nature, in the Godhead. The members were first called Bidellians, then Socinians, and finally assumed for themselves the name of Unitarians. Twice, however, after this, during the Commonwealth, B. suffered severely for his creed, and even the iron-willed Protector himself, in order to save his life, was compelled to banish him to one of the Scilly Isles. Three years of imprisonment having elapsed, he was permitted to return, and continued to preach in London till after the restoration; but 1662, June, he was again apprehended and fined £100; and being unable to pay, was committed to jail, where he died in the following Sep. Hischaracter was estimable.

BIDDLE, Nicholas: naval officer: 1750, Sep. 10—1778, Mar. 7; b. Philadelphia. He ran away from home at the age of 13, went to sea, was wrecked, and lived two months on a desert island with two companions. He was appointed midshipman in the Brit. navy 1770, and was on the same ship with Nelson 1773. When the revolution broke out, B. returned home, and was one of the original 19 naval officers appointed by congress 1775, Dec. 22. He was assigned first to the brig of war *Andrea Doria;* and 1776, June 6, congress appointed B. to command the 32-gun frigate *Randolph*, the first U. S. frigate ever launched, and on his first cruise he captured 4 prizes. After bringing them in, he sailed from Charleston, in command of a small squadron, of which the *Randolph* was flagship. In an engagement 1777, Mar. 7, with the Brit. 64-gun ship *Yarmouth*, the *Randolph* blew up, and B., with the crew of 310 men, perished.

BIDDLE, Nicholas: financier: 1786, Jan. 8—1844, Feb. 27; b. Philadelphia. He entered the Univ. of Pennsylvania 1799, and afterward Princeton Coll., where he graduated 1801. He studied law; and was sec. to John Armstrong, U. S. minister to France, 1804, and afterward sec. to James Monroe, U. S. minister to England, and on his return 1807, began to practice law. B. was elected to the Penn. legislature 1810, and to the senate 1812. In the legislature he was the champion of popular education, and out of his strenuous efforts in that direction eventually grew the Penn. school system. In 1815 his statesman-like abilities were shown in his course concerning the Hartford convention.

B advocated renewing the charter of the U. S. Bank, and his speech on the subject in the legislature was highly commended by Chief-Justice Marshall. He was appointed govt. director of the U. S. Bank 1819; and later its pres., holding that position, which gave him public repute as the leading financier of the country, at the time of the removal of the govt. deposits by Pres. Jackson, 1833. He resigned the office 1839. B. was prominent in the arrangements for establishing Girard Coll. under the will of Stephen Girard, and was generally esteemed as an active and public-spirited citizen. He edited the *Port-Folio* (1806–23); and prepared for publication the account (2 vols.) of Lewis and Clarke's explorations of the Columbia river; indeed it has been credibly stated that the work was B.'s direct compilation.

BIDDY, n. *bid'dĭ* [F. *bidet*, a little horse]: a domestic fowl, especially a chicken; a servant-girl (a corruption of Bridget).

BIDE, v. *bīd* [AS. *bidan;* Dut. *beiden;* Icel. *bitha*, to wait, to remain]: to suffer; to endure; to live; to remain in a place; to continue in a state; to wait—as to bide one's time. BIDING, imp. *bī'dĭng*, dwelling; remaining. BIDE BY IT, in *OE.*, to continue in the same state; to adhere to it.

BIDEFORD, *bid'e-ford:* seaport town of Devonshire, Eng., on both sides of the Torridge, near its confluence with the estuary of the Taw, 30 m. n.w. of Exeter. A bridge of 24 arches, and 677 ft. long, unites the two divisions of B., which has manufactures of ropes, sails, earthenware, and leather. In former times Bideford had an extensive shipping trade, and is said to have imported more tobacco in some years than the metropolis. Four m. away, on the coast, is the health resort, *Westward Ho*, named after Kingsley's novel. Pop. (1901) 8,754.

BIDELLUS, n. *bĭ-dĕl'ŭs:* see BEDELLUS.

BIDENS, n. *bī'denz* [L. *bi*, two; *dens*, a tooth]: genus of plants, ord. *Compositæ*. Our species include Bur Marigold, Beggar-ticks, etc.; the seed-hooks catch on dress.

BIDENTAL, a. *bī-dĕn'tăl* [L. *bis*, twice; *dentem*, a tooth]: having two teeth. BIDENTATE, a. *bī-dĕn-tāt*, in *bot.*, applied to leaves that have their marginal incisions or teeth edged by smaller teeth.

BIDERY, n. *bī'dėr-ĭ* [from *Bidar* in Hyderabad in the Deccan]: an Indian alloy of copper, lead, and tin, of which many beautiful articles are manufactured.

BIDET, n. *bĭd'ĕt* [F. *bidet;* It. *bidetto*, a nag, a pony]: a small horse; an article of bedroom furniture.

BIDPAI, *bid'pī*, or PILPAI, *pil'pī:* reputed author of a collection of fables and stories widely current in Asia and Europe for nearly 2,000 years, passing as a compendium of practical wisdom. Scarcely any book except the Bible has been translated into so many languages; and its history is part of the history of human development. The researches of Colebrooke, Wilson, Sylvestre de Sacy, and

Loiseleur des Longchamps (*Essai sur les Fables Indiennes*, 1838), have successfully traced the origin of the collection, its spread, and the alterations that it has undergone among different nations. The ultimate source is the old Indian collection in Sanskrit, with the title *Panchatantra* (q.v.), i.e., 'Five Sections' (edited by Kosegarten, Bonn, 1848). An analytical account of the Sanskrit *Panchatantra*, by H. H. Wilson—who determines the date of its production to be subsequent to A.D. 5th c.—is printed in the *Transactions* of the Royal Asiatic Soc. vol. i.; but an abridgment of it, called the *Hitopadesa* (q.v.) is better known than the original. A critical edition of the *Hitopadesa* has been published by A. W. von Schlegel and Lassen (Bonn, 1829), and translations have been made into English by Wilkins and Jones, and into German by M. Müller (Leip. 1844).

Under the Persian king, Nushirvan (531–570), the *Panchatantra* was translated into the Pehlvi tongue by his physician Barsuyeh, under the title of *Kalilah and Dimnah* (from two jackals that take a prominent part in the first fable). This Pehlvi version has perished with all the profane literature of ancient Persia; but under the Caliph Almansur (754–775), it was translated into Arabic by Abdallah ibn-Almokaffa (pub. by De Sacy, Par. 1816). From Almokaffa's Arabic translation—in the introduction to which the author of the collection is called Bidpai, the chief of Indian philosophers—have flowed all the other translations and paraphrases of the East and West. Several Arabic poets worked it up into complete poems; and in the new Persian literature a great variety of versions and paraphrases, some in verse, some in prose, were made. From the Persian of Vaez (about the end of the 15th c.), the work was translated into Turkish about 1540 by Ali Chelebi, under the title of *Homayun-nămch*, the Imperial Book. There are translations also into the Malay, Mongol, and Afghan languages.

Toward the end of the 11th c., a translation had appeared, from the Arabic of Almokaffa, into Greek, by Simeon Sethus; and later, a Hebrew translation by Rabbi Joel, which John of Capua, a converted Jew, in the last half of the 13th c., retranslated into Latin with the title of *Directorium Humanæ Vitæ* (published first at Augs. 1480, and repeatedly since). A version from this was made into German by Eberhard I., Duke of Würtemberg (d. 1325), published at Ulm, 1483. Under Alfonso X. of Castile (1252–84), Almokaffa's work was translated into Castilian, and from that into Latin by Raymond of Veziers, a learned physician. There are translations in most European languages. In 1884, Prof. Wright published an edition of the Syriac text of *Kalilah and Dimnah;* and in 1885, Mr. Keith-Falconer gave an excellent translation from the Syriac, with notes and bibliography under the title of *Kalilah and Dimnah, or the Fables of Bidpai.*

BIEL: see BIENNE.

BIELA'S COMET, *bē'lăz kŏm'ĕt:* one of the comets of short period (6¾ years), first seen at Johannisberg, 1826, Feb. 27, by Wilhelm von Biela, Austrian officer; and 10 days later at Marseille by Gambert. On its return in 1846 it was in two parts, presenting the appearance of two comets about 157,000 m. apart. In 1852, its parts were 1,250,000 m. apart; and since that time it has not been seen. It has been suggested that its parts have separated and become material for meteoric showers. Biela (1782–1856), after whom the comet was named, was born in Roslau on the Elbe (Prussia), and entered first upon a military career. After serving for some time in the Austrian army he withdrew from the service, and gave his leisure to the fine arts and astronomy.

BIELEFELD, *bē'le-fĕlt:* busy town of Westphalia, Prussia, picturesquely situated on the Lutter or Lutterbach, at the foot of the Sparrenberg Mountain, about 26 m. s.w. of Minden. The broad ditch which formerly surrounded B. is now converted into pleasant walks. The old walls of the town have been put to a similar use. The castle of Sparrenberg, erected 1545 on the site of an old Guelphic fortress, and which now serves as a prison, is near. B., which is the centre of the Westphalian linen trade, the extensive bleaching-grounds, manufactures of woolen goods, soap, leather, etc., and its meerschaum pipes are celebrated. Pop. (1890) 39,942; (1900) 63,046.

BIELEV, *be-ā-lĕv':* ancient town of European Russia, in the gov. of Tula; on the left bank of the Oka; lat. 53° 45′ n., long. 36° 5′ e. It has a large trade, and manufactures of soap, hardware, leather, etc. Pop. abt. 9,000.

BIELITZ, *bē'lits:* town of Austrian Silesia, on the left bank of the river Biala, about 18 m. n.e. of Teschen. A bridge over the river connects it with the town of Biala, in Galicia. It has dye-works and print-fields, and a large trade in woolens and kerseymeres with Russia, Poland, Hungary, and Italy. B. belongs to the Princes Sulkowsky, whose castle here is now converted into public offices. Pop. abt. 15,000.

BIELLA, *bi-ĕ'lâ:* town of n. Italy, province of Novara, about 38 m. n.e. of Turin, with which it is connected by railway. It is pleasantly situated on the Cervo, an affluent of the Sesia, and has manufactures of woolens, hats, paper, etc. Pop. 12,000.

BIELO-OZERO, *be-ā'lo-o-zā'ro* (the White Lake): lake in the govt. of Novgorod, Russia; lat 60° 10′ n., long. 37° 30′ e. It is elliptical in shape, its length about 25 m., and its breadth 20. Its bottom is composed of white clay, which, during stormy weather, gives to the water a milky appearance; hence, doubtless, the name White Lake. B. is fed by numerous small streams, is deep, and abounds with fish. Its surplus waters are conveyed by the Sheksna river into the Volga. Canals unite it with the Onega, Sukona, and Dwina.

BIELO-OZERSK, an old wooden town on the s. shore of the lake, formerly cap. of an ancient principality of the same name, has a trade in cattle, corn, and pitch, and manufactures of candles. Pop. about 5,000.

BIELOPOL, *be-ā-lō'pol:* town of Russia, govt. of Kharkov, from which it is 106 m. n.w. It has considerable trade and extensive distilleries. Pop. about 15,000.

BIELSHÖH'LE: singular cavern in one of the Harz Mountains, called Bielstein, on the right bank of the Bode, in the duchy of Brunswick, Germany. It was discovered, 1768. The entrance to it is more than 100 ft. above the bed of the stream. The cavern is divided into eleven main compartments, and contains much of that curiously freakish work which nature delights to execute in stalactites in seeming imitation of the inventions of human art, as in the eighth division, where a formation like the framework of an organ has been fashioned out of the slow drip of ages. In the ninth, there is also a picture of a sea, arrested in its motion, its waves silent, but in act to roll.

BIELSK, *be-ĕlsk':* town of Russia, govt. of Grodno; in a very fertile district, watered by the Narev and Nurzek. It was formerly capital of a Polish palatinate, is well built, and has a fine custom-house. Pop. 10,000.

BIENNE, *be'en*, or BIEL: town of Switzerland, canton of Bern, 17 m. n.w. of the city of Bern; beautifully situated at the foot of the vine-clad Jura, at the mouth of the valley of the Suze, and at the n. extremity of the lake of Bienne. It is surrounded by old walls, and approached by shady avenues. The people are engaged in the manufacture of watches, leather, cotton, etc. B. is a place of great antiquity. It belonged to the Bishop of Bâle, or Basel; but as early as 1352, it entered into an alliance with Bern, for the protection of its liberties, and for this display of independence was burned by its ecclesiastical ruler. The Reformation, however, so weakened the clerical power that in the beginning of the 17th c. it had become merely nominal; and B. was essentially a free and independent city until 1798, when it was annexed to France. In 1815, it was united to Bern. Pop. (1901) 22,280.

BIENNE, LAKE OF: lake extending s.w. from the town of Bienne along the foot of the Jura Mountains, until within 3 m. of Lake Neuchâtel; length about 10 m.; greatest breadth 3. It is 1,419 ft. above the level of the sea, 8 ft. lower than Lake Neuchâtel, whose surplus waters it receives at its s. extremity by the Thiel, by which river it again discharges its own. Its greatest depth is 280 ft. Toward its s. extremity is the island of St. Pierre, crowned with a grove of fine old oaks, to which Rousseau retired for two months after his proscription at Paris in 1765.

BIENNIAL, a. *bī-ĕn'nĭ-ăl* [L. *biennālis*, for two years —from *bis*, twice; *annus*, a year]: continuing or lasting throughout two years—applied to plants that do not bear flowers and seed till the second year, and then die; happening once in two years: N. a plant that stands two years. BIEN'NALLY, ad. *-lĭ*.

JEAN BAPTISTE BIENVILLE.
GOVERNOR OF LOUISIANA.

BIENNIALS, *bī-en'ni-ălz*, or BIENNIAL PLANTS: plants which do not flower in the first season of their growth, but flower and bear fruit in the second season, and then die. Many of our cultivated plants are B., as the carrot, turnip, parsnip, parsley, celery, etc., and many of the most esteemed flowers of our gardens, as stock, wallflower, etc. But plants which in ordinary circumstances are B. often become annuals (q.v.), when early sowing, warm weather, or other causes promote the earlier development of a flowering stem, as is continually exemplified in all the kinds already named. If, on the other hand, the flowering of the plant is prevented—or, in many cases, if merely prevented from ripening its seed—it will continue to live much longer: the same bed of parsley, if regularly cut over, will remain productive for a number of years.

BIENVILLE, *bē-ăng-vēl'*, JEAN BAPTISTE, Sieur DE: 1680, Feb. 23—1765; b. Montreal: adventurer and civil administrator. He was one of 11 sons of Charles Lemoyne, Baron of Longueuil, and 3 of his brothers, Iberville, Sérigny, and Châteauguay, were, like himself, prominent figures in the early history of Louisiana. While a boy, he accompanied his elder brother, Iberville, on several voyages, and in a naval action off the New England coast was severely wounded. He was with Iberville when the first settlement was made at the mouth of the Mississippi, 1699. Iberville then went back to France, leaving Sauvolle in command, and on the death of Sauvolle, 1701, B. succeeded to the direction of the colony, and transferred the capital to Mobile. He was dismissed from office 1707 on charge of misconduct, but was restored to favor, and appointed lieut.gov. 1713. A new company of colonists having been sent out, B. was appointed gov., and founded the city of New Orleans 1718. He captured Pensacola from the Spaniards in the same year, and placed his bro. Châteauguay in command. He made New Orleans the seat of govt. 1723, but was removed from office under charges 1726. Again he was sent to La. as gov. 1733. In consequence of an unsuccessful expedition against the Chickasaws, he was again deposed. Before leaving La., he promulgated a code of laws which remained in force until after La. came into the possession of the United States. By this code, Jews were excluded from the territory, the Rom. Cath. religion alone was tolerated, and the condition of slaves was regulated.—B. died in France.

BIER, n. *bēr* [AS. *baer;* F. *bière*, a bier: Ger. *bâra*, a litter: Gael. *bara*, a barrow]: a frame of wood, or a carriage, on which the dead are borne to the grave.

BIERSTADT, *bēr'stât*, ALBERT: painter: b Düsseldorf, Germany, 1830, Jan. 7. He accompanied his parents to Salem, Mass., 1831; began painting in oil 1851; studied painting in Düsseldorf and Rome 1853–57; accompanied Gen. Lander's expedition to Colo. and Cal. 1858; elected member of the National Acad. of Design 1860; received the diploma and cross of the Legion of Honor 1867, and crosses of St. Stanislaus 1869 and 70; elected member of the Acad. of Fine Arts in St Petersburg 1871; and has received medals of honor from Austria, Bavaria, Belgium, and Germany. His paintings include *Laramie Peak* (1861); *Lander's Peak* (1863): *North Fork of the Platte* (1864); *Down the Yosemite* (1865); *El Capitan on Merced River* (1866); *Storm on Mt. Rosalie* (1866); *Valley of the Yosemite* (1866); *Settlement of California* and *Discovery of the Hudson River* (both in the national capitol); *Pool on Mt. Whitney* (1870); *Great Trees of California* (1874); *Valley of Kern River, California* (1875); *Estes Park, Colorado, Mountain Lake* and *Mt. Corcoran in the Sierra Nevada* (1878): *Geysers* (1883); *Storm on the Matterhorn* (1884), etc. He died 1902, Feb. 18.

BIERVLIET, *bēr-vlēt':* village of the Netherlands, province of Zeeland, 13 m. e.n.e. of Sluis; noticeable as the birthplace of William Beukelzoon (q.v.), who in 1386 invented the method of curing herrings. In 1377, B. was detached from the mainland by an inundation, and remains insular.

BIES-BOSCH, *bēs-bosk':* marshy sheet of water of the Netherlands, between the provinces N. Brabant and S. Holland, formed in 1421, Nov., by an inundation which destroyed 72 villages and 100,000 people. It forms that part of the estuary of the Maas called Holland's Diep. It is interspersed with several islands.

BIESTINGS, n. plu. *bēst'ĭngz* [AS. *bysting;* Dut. *biest*, biestings: Goth. *beist*, leaven (see BEESTINGS)]: the first milk given by a cow after calving.

BIÈVRES, *be-āv'r':* village of France (Seine-et-Oise), 5 m. s.e. of Versailles, on a woody slope at the base of which the Bièvre, a tributary of the Seine, has its source. It has numerous villas and the castle of Bel-Air.

BIEZ, *be-ā'*, OUDARD DU: d. 1553 or 1554: French marshal, one of the most illustrious captains of his time. After the death of Bayard (1524), François I. gave B. half of the knight's troops. In 1542, he was made marshal of France. Having met with some reverses, his enemies succeeded, 1549, in having sentence of death pronounced against him; but he was pardoned, and in 1575 his honor was restored.

BIFACIAL, a. *bī-fā'shal* [L. *bis*, twice; *făciĕs*, the face]: having two like faces.

BIFARIOUS, a. *bī-fā'rĭ-ŭs* [L. *bĭfārĭŭs*, twofold, double —from *fari*, to speak, to say]: in *bot.*. placed in two rows, one on each side of an axis

BIFASCIATE, *bī-făz'ĭ-āt* [L. *bis*, twice, and *fasciatus*, made into a bundle, banded]: in *zoology*, having two bands of color, transverse or encircling.

BIFEROUS, a. *bĭf'er-ŭs* [L. *bis*, twice: *fĕro*, I carry]: bearing fruit twice a year.

BIFFIN: see APPLE.

BIFID, a. *bī'fĭd* [L. *bis*, twice; *fidi*, I cleft or split]: cleft in two; opening with a cleft, but not deeply divided: also BIFIDATE, a. *bĭf'ĭ-dāt*, cleft in two. BIFIDITY, n. *bī-fĭd'ĭ-tĭ*, state or quality of being bifid. BIFID CIRCLE, circle cut at the extremities of a diameter by another circle, with relation to which it is said to be *bifid*. BIFID SUBSTITUTION, in *math.*, substitution relating to pairs of 8 letters, as elements. The whole 8 are to be discriminated into 2 sets of 4 letters, and every pair whereof both the members belong to the same set of 4 is to be replaced by the other pair of the same set of 4, the other pairs remaining unchanged.

BIFILAR, a. *bī-fī'lėr* [L. *bi* and *filar*]: two-threaded; fitted with two threads: said of instruments in which two threads are employed. BIFILAR BALANCE, or simply BIFILAR, a micrometer for measuring minute distances and angles, which it does by means of two exceedingly fine threads. BIFILAR MAGNETOMETER, a magnetometer contrived on the principle of B. suspension. BIFILAR SUSPENSION, a mode of suspending a body for the purpose of measuring horizontal couples or forces of rotation. The body that the couple to be measured is to turn is suspended by two threads of equal length, attached to its points equidistant from, and on opposite sides of, its centre of gravity, from two fixed points on one higher level. When the body is turned round a vertical axis through its centre, gravity tends to restore it to its original position; and the moment of this force of restitution can be calculated with precision from the lengths of the two threads, the distances of their attachments, and the weight of the suspended body.

BIFLABELLATE, *bī-fla-bĕl'lāt* [L. *bis*, twice, and *flabellatus*, fan-shaped]: in *entom.*, possessing short joints, each having on two opposite sides a very long, rather flattened process, the two processes lying close together, so that the whole organ is somewhat fan-like. The term is applied to the antennæ of insects: it expresses an extreme modification of the bipectinate type.

BIFLAGELLATE, a. *bī-fla-jĕl'lāt* [L. *bis*, and *flagellatus*, furnished with a whip, or lashes]: having two flagella, or whip-like processes or appendages.

BIFLEX, a. *bī'flĕks* [L. *bis*, twice; *flexus*, bent, curved]: in the sheep, designating a canal between the digits, so called from its peculiar curve, also called the 'interdigital canal.'

BIFOCAL, n. *bī-fō'kal:* having two focuses: see LENS.

BIFOLD, a. *bī'fōld* [L. *bis*, and *fold*]: double; of two kinds. BI'FORM, a. *-fawrm* [L. *forma*, shape]: having two forms.

BIFOLIATE, a. *bī-fō'lĭ-āt* [L. *bis*, twice; and *foliātus*, leaved]: in *bot.*, applied to compound leaves having two leaflets.

BIFOLLICULAR, a. *bī'fōl-lĭk'ū-lĕr* [L. *bis*, twice; *follic'ulus*, a small bag or sack]: in *bot.*, having a double follicle.

BIFORINE, n. *bĭf'ŏr-ĭn* [L. *bĭfŏris*, having two doors—from *bis*, twice; *fŏris*, a door]: in *bot.*, an oblong raphidian cell, having an opening at each end. BIFORATE, *bī'fŏr-āt* [L. *bi*, two, and *foris*, a door]: having two perforations.

BIFORKED, a. *bī'fawrkt* [L. *bi*, double, and *forked*] having two prongs or forks.

BIFORM, a. *bī'fawrm* [L. *bis*, *forma*, form]: having two forms or shapes. BIFORM'ITY, n. the state of being biform.

BIFRONT, a. *bī'frŭnt* [L. *bifrons*, with two foreheads or fronts]: having two fronts, two faces.

BIFRÖST, n. *bĭf'röst* [Scandinavian, from *bifa*, to tremble; *röst*, path]: the bridge which, in the mythology of the anc. Scandinavians, connects earth with heaven. The idea of this myth was suggested by the rainbow.

BIFURCATE, a. *bī-fĕr'kāt*, BIFUR'CATED, a. *-kā-tĕd*, or BIFUR'COUS, a. *-kŭs* [L. *bĭfurcātus*, two-pronged—from *bis*, twice; *furca*, a fork]: forked; separated into two heads or branches. BI'FURCA'TION, n. *-kā'shŭn*, a dividing into two, as the division of the trunk of vessels, or of the stem of a plant.

BIG, a. *bĭg* [original spelling *bug:* Icel. *bolga*, a swelling: Dan. *bug*, belly]: large; great in size or bulk; swollen; distended; so full of something as to be ready to burst. BIG'LY, ad. *-lĭ*, blusteringly; pompously; conceitedly. BIG'NESS, n. the quality of being big; largeness.—SYN. of 'big': large; great; bulky; arrogant; proud; pregnant; full; inflated; distended.

BIG, v. *bĭg* [AS. *byggan;* Icel. *byggia*, to build; to inhabit: Ger. *bauen*, to build]: in *OE.* and *Scot.*, to build; to remain. BIG'GING, imp. BIGGED, pp. *bĭgd*. BIGGIN, or BIGGYN, n. *bĭg'ĭn*, a house of a larger and more pretentious size; a building.

BIG, or BIGG, n. *bĭg* [Dan. *bug*]· winter barley: see BARLEY.

BIGA, or BIGHA, *bē'gâ:* town of Turkey in Asia, on the Bolki, abt. 100 m. s.w. of Constantinople. It was near this place that Alexander gained his first victory over Darius.

BIGA, *bī'ga:* Roman term applied in ancient times to vehicles drawn by two horses abreast; and commonly to the Roman chariot used in processions or in the circus. In shape it resembled the Greek war-chariot—a short body on two wheels, low, and open behind, where the charioteer entered, but higher and closed in front.

BIGAMY, n. *bĭg'ă-mĭ* [F. *bigamie*—from L. *biga'mĭă:* L. *bis*, twice; Gr. *gaméō*, I marry]. the crime of marrying a second wife or husband while a first is still alive. BIG'AMIST, n. *-mĭst*, one who has two wives or husbands at one time. Bigamy is an offense perfectly intelligible in itself to the popular understanding, yet, with a due regard to the strict meaning of the word, extremely difficult legally to define. Blackstone objects to the use of it as a term descriptive of the offense in view; for he says it is corruptly so called, because B. properly signifies being *twice married*, which a man or a woman may legally be; and he therefore prefers the term *polygamy*. B., however, even according to the literal meaning, was an offense, or rather disqualification, according to the canonists, who explained it to consist in marrying two virgins successively, one after the death of the other, or in once marrying a widow; and persons so offending or disqualified were held incapable of holy orders, and therefore B. was anciently considered a good counterplea to the claim of *benefit of clergy* (q.v.), although the law in that respect was altered by a statute passed in the reign of Edward VI., when, bigamists or not, the clergy resumed their strange privilege. Different views prevailed in more modern times, and at a period, too, when the restraints of ecclesiastical dogmas had been thrown off. It is known that certain of the leaders of the German Reformation, including Luther, Melanchthon, Bucer, and Melander, did not withhold their consent from Philip, Landgrave of Hesse, champion of the Reformation, who, having lost conceit of his wife, had applied to the Protestant doctors for license to have another, and which license was not withheld, for the marriage took place, and was performed by Melander in presence of Melanchthon, Bucer, and others; and *privately*, as the marriage-contract bears, 'to avoid scandal, seeing that, in modern times, it has not been usual to have two wives at once, although *in this case it be Christian and lawful.*' Whether Luther and the other Protestant doctors actually held views favorable to polygamy has been the subject of warm controversy (see Sir William Hamilton's *Discussions on Philosophy and Literature*, 1852, 2d ed., 1853; and Archdeacon Hare's *Vindication of Luther*, 1855). Sir William Hamilton asserts that Luther believed in 'the religious legality' of polygamy, and wished it to be sanctioned by the civil authorities—an assertion, however, of which the promised proof never appeared. Archdeacon Hare, on the other hand, maintains that Luther and Melanchthon held only that in certain extraordinary emergencies dispensations from the usual law of marriage might be granted. Be that as it may, the conduct of the Reformation leaders in this matter has been universally condemned, even by Protestants. The ideas referred to never gained ground in Germany; while in Great Britain 'monogamy' not only continued an institution, but its violation was regarded and still is, as a serious offense.

The first English statute distinctly treating B. as a felony was the 1 James I. c. 11, which enacted that a person so

convicted should suffer death. What now constitutes the English law regarding the crime of bigamy is the 22d section of 9 Geo. IV. c. 31, passed in 1828. B. is there declared to be committed by 'any person who, being married, shall marry any other person during the life of the former husband or wife, whether the second marriage shall have taken place in England or elsewhere'—a definition that appears to be adopted by the recent Divorce Act, the 20 and 21 Vict. c. 85. More correctly, however, the offense of B. may be said to consist in going through the *form* or *appearance* of a second marriage, while a first subsists, with a man or woman, against whom the most odious deceit and fraud is thus practiced, and upon whom, especially in case of a woman, the deepest injury is inflicted; for the second marriage is merely a marriage in form—no real marriage at all, because a man cannot have two wives, or a woman two husbands, at one and the same time. In the United States, the laws against B. follow in general the Eng. law: though the important differences between the laws in the various states cause much confusion, and often embarrass the prosecution for B. But everywhere B. is treated as a crime, punishable by imprisonment, usually one to three years, and by fine, usually $500 to $1,000. In prosecutions for B., the first wife is usually not admissible as a witness against her husband, because she is the true wife; but the second may testify against the husband, because she is not only no wife at all, but because she stands in the position of being the party peculiarly injured by the B. The same is the procedure in the case of a second husband. Provisions have however been made by recent laws in some places for admitting husband or wife as witness for or against each other. The law excepts from its provisions such cases as the following: That of any person marrying a second time, whose husband or wife shall have been continually absent from such person and not known by such person to be living for the space of seven [or other specified number of] years then last past; also that of a person whose former marriage shall have been declared void by any court of competent jurisdiction.

Usually, every person counselling or aiding the offender, is held equally guilty, and liable to the same penalty: also accessories before and after the fact are severely punishable.—See MARRIAGE: DIVORCE: POLYGAMY.

BIGAROON, n. *big·a·rôn'* [F *bigarreau* (?)]: the large white-heart variety of cherry.

BIG BETHEL, BATTLE OF: 1861, June 10, at Big Bethel, Va., between the Union forces under Gen. Butler, and the Confederate forces under Gen. Magruder. After Gen. Butler had fortified Newport News he found that the Confederates had control of all the important points in his front, and he planned the surprise and capture of Little Bethel. At midnight June 9–10, he posted troops to gain the rear of the position and to make an assault at daybreak; but unfortunately one of the Union detachments mistook the other for the enemy,

and opened fire on it. This firing aroused the Confederates, and they hurriedly retreated to Big Bethel, a better position, and threw up earthworks. The main Union body finding Little Bethel deserted, marched on Big Bethel, and assaulted it several times without success. The gallant Maj. Theodore Winthrop was killed while leading an assault. The Union troops retreated, and the Confederates, fearing Union reinforcements, fell back to Yorktown. Union loss about 100; Confederate, about 10.

BIG BLACK RIVER: rising in Choctaw co., Miss., flowing s. w. 200 m., and then dividing, and entering the Mississippi, one branch in Warren co., the other in Claiborne co., at Grand Gulf. It flows through a rich plain which produces large quantities of cotton.

BIG BONE LICK: a famous 'salt lick,' or deposit of salt near a spring, in Boone co., Ky., 12 m. s. of Burlington; named from the large quantity of fossil bones found there of the mastodon and other animals, which are supposed to have come to lick the salt, and to have perished in the marsh which formerly surrounded the spot.

BIGELOW, *big'ē-lō*, Erastus Brigham: inventor: 1814, Apr. 2—1879, Dec. 6; b. West Boylston, Mass. His early life having been associated with cotton weaving, his talent for invention took this direction; and before the age of 18 he invented a hand-loom for making suspender-webbing, and a machine for making piping-cord. His next invention, 1838, was an automatic loom for weaving counterpanes, which subsequent improvements brought to perfection. Having invented a loom for weaving coach-lace, his attention was next turned to carpet weaving, and he constructed a power-loom for weaving 2-ply ingrain carpets, which trebled the product of hand-looms. He followed this with his greatest invention, a power-loom for weaving Brussels and velvet tapestry carpets. He founded the Lancaster Quilt Company and Bigelow Carpet Company, at Clinton, Mass., which originated the importance of that town as a manufacturing centre. He published *The Tariff Question* (1863), a scheme of uniform taxation.

BIG'ELOW, Frank Hagar: astronomer: 1851, Aug. 28 ——————; b. Concord, Mass. He graduated from Harvard 1873, and until 1876 acted as asst. to Dr. A. B. Gould in the astronomical observatory at Cordoba, in the Argentine Republic. During the following year he was employed in the Naval Observatory, Washington, D. C. He then studied theology two years and undertook the ministry, but gave it up on account of failing health, and went again to Cordoba, 1881–3, after which he was for 6 years prof. of mathematics and astronomy in Racine Coll., Wis. In 1889 B. entered the Nautical Almanac office in Washington, and 1891, was appointed to a newly created office in the Weather Bureau at Washington. He has made many inventions of processes important in practical astronomy.

BIGELOW, Jacob, M.D., LL.D.: 1787, Feb. 27—1879, Jan. 10; b. Sudbury, Mass. He graduated at Harvard 1806, studied medicine, and practiced in Boston. Having interested himself in Botany, he became widely known among European botanists, and many plants were named for him. In 1820, with four others, forming a committee, he framed the *American Pharmacopœia*, in which he introduced improvements in nomenclature. He founded the cemetery of Mt. Auburn, near Boston, for which he also supplied some of the architectural designs. B. was a physician of the Mass. Gen. Hospital 20 years, prof. of materia medica in Harvard Univ. 40 years, and Rumford prof. in that institution 9 years. He was also pres. of the Mass. Med. Soc. many years, and for a time pres. of the American Acad. of Arts and Sciences. He published *Useful Arts Considered in Connection with the Applications of Science* (2 vols. 1840); *Florula Bostoniensis* (1814, 24, 40); *American Medical Botany* (3 vols. 1817, 20); *Nature in Disease* (1854); *A Brief Exposition of Rational Medicine* (1858); *History of Mount Auburn* (1860); *Remarks on Classical Studies* (1867); and other works.

BIGELOW, *bĭg′ē-lō*, John, LL.D.; born Malden, N. Y., 1817, Nov. 25. After graduating from Union College 1835, and taking a legal course, he commenced the practice of law in New York 1839, but gave considerable attention to journalism. He edited *The Plebian*, *The Democratic Review*, and some books of travel; was inspector of the state prison at Sing Sing 1845–48, managing editor and part owner of the *Evening Post* 1849–61; was U. S. consul at Paris 1861–65, and minister to France 1865–67. He was sec. of state of N. Y. 1867–8, and was appointed assistant U. S. treasurer at New York 1885. The appointment was confirmed by the senate, but he declined to serve. In 1886 he inspected the Panama canal for the New York Chamber of Commerse. He was authorized to prepare for publication the papers of Samuel J. Tilden, and was named as one of the trustees of a large fund left by the latter to establish a public library in New York. In 1888 he was the American commissioner to the International Exhibition at Brussels. The Tilden Trust Fund and the Astor and Lenox libraries were consolidated under the title of the New York Public Library (Astor, Lenox, and Tilden foundations) 1895, and he was chosen president of the consolidated board of trustees, and appointed chairman of the executive committee. He has written *Jamaica in* 1850 *or the Effects of Sixteen Years of Freedom on a Slave Colony* (1852); *France and Hereditary Monarchy* (1871); *Wit and Wisdom of the Haytians* (1882); *Molinos the Quietest* (1882); *Writings and Speeches of Samuel J. Tilden* (2 vols., 1885); *The Complete Works of Benjamin Franklin* (1868, 5th ed., 1905); *France and the Confederate Navy* (1888); *The Bible That Was Dead and Is Alive Again* (1893); *Life of Samuel J. Tilden* (1895); *The Mystery of Sleep* (1897); *Some Recollections of Laboulaye; Retrospections of an Active Life.*

BIGELOW, John, Jr., American military officer, son of the preceding: b. New York, 1854, May 12. He was educated in Paris, Bonn, Berlin, Freiburg, and Providence, R. I.; graduated at the United States Military Academy in 1877; and was assigned to the 10th United States Cavalry. In 1887–9 was adjutant general of militia in the District of Columbia; and in 1894–8, professor of military science at the Massachusetts Institute of Technology. During the war with Spain, he was wounded in the attack on San Juan, Cuba, 1898, July 1. He was promoted major in 1903, retired from active service 1904, Sept. 15, and since 1904, Nov. 8, has been professor of French in the Massachusetts Institute of Technology. He published *Principles of Strategy, Illustrated Mainly from American Campaigns* (rev. ed., 1894); *Reminiscences of the Santiago Campaign.*

BIGELOW, Marshall Train, American printer and proof-reader: b. South Natick, Mass., 1822, Oct. 5; d. Cambridge, Mass., 1902, Dec. 28. In 1843 he became associated with the University Press in Cambridge, the firm name of which from 1859 to 1879, was Welch, Bigelow & Company. He was long classed as one of the most competent of American proof-readers. He published *Punctuation and other Typographic Matters* (1881); *Mistakes in writing English and How to Avoid Them* (1886).

BIGELOW, Melville Madison, American lawyer: b. Eaton Rapids, Mich., 1846, Aug. 2. He graduated at the University of Michigan in 1866, and engaged in practice in Boston. His works include *The Laws of Bills, Notes and Checks; English Procedure in the Norman Period; The Law of Fraud on its Civil Side; Elements of Equity; Elements of the Law of Torts; Placita Anglo-Normannia; The Law of Wills; The Law of Estoppel; Leading Cases in the Law of Torts*, etc.

BIGELOW, Poultney, American author: b. New York (son of John Bigelow), 1855, Sept. 10. He graduated at Yale University, and at the Columbia Law School in 1882, and was admitted to the bar. In 1875–6 he took a voyage around the world in a sailing-ship which was wrecked on the coast of Japan. He traveled in China, Africa, the West Indies, and Demerara. He has made canoe voyages on the principal waters of Europe, and was the first person to take a canoe through the Iron Gates of the Danube. Emperor William II. has been his personal friend since they were students together in Germany. He wrote, *The German Emperor and His Neighbors; Paddles and Politics Down the Danube; The Borderland of Czar and Kaiser; History of the German Struggle for Liberty; White Man's Africa; Children of the Nations* (1901); etc. He edited the *Outing* magazine, 1885–7; and has also been correspondent of *Harper's Weekly*, and the London *Times.*

BIGELOW, Robert Payne, American biologist: b. Baldwinsville, N. Y., 1863, July 10. He graduated at Harvard in 1887, and studied at Johns Hopkins 1891–3.

In 1893 he became instructor in biology, and in 1895 librarian in the Massachusetts Institute of Technology. He has written a number of papers on zoological subjects.

BIGELOW, Timothy, American military officer; b. Worcester, Mass., 1739, Aug. 12; d. there, 1790, March 31. On May 23, 1775, he led a company of minute-men to Cambridge, and became major in Ward's regiment. He was under Arnold in the expedition to Quebec in 1775, and was there captured, remaining a prisoner till 1776. He became colonel in 1777, and assisted in the capture of Burgoyne. He also saw service at Valley Forge, Monmouth, West Point, and Yorktown.

BIGELOW, Timothy, American lawyer (son of the preceding): b. Worcester Mass., 1767, April 30; d. 1821, May 18. He graduated at Harvard College in 1786, was admitted to the bar, and settled in practice at Groton, Mass., in 1789. He took an active part in politics as a Federalist, was for 20 years a member of the State legislature, and 11 years speaker of the House of Representatives, and a member of the Hartford Convention. In 1807 he removed to Medford, and kept an office in Boston. His legal standing and practice were at the head of his profession in his time; and in the course of 32 years, he was supposed to have argued 10,000 causes.

BIGGAR, Hamilton Fisk, Canadian physician: b. Oakville, Ont., 1839, March 15. He was educated at Victoria University, and pursued his medical studies at the University of Medicine and Surgery, Cleveland, Ohio. In 1866 he began practice in Cleveland, and in 1867 was made professor of anatomy and clinical surgery in the Homœopathic Hospital College there. Later he was for 10 years professor of clinical surgery, with operations in the same college. In 1900 he held the chair of surgical diseases of women and clinical surgery. Dr. Biggar founded the Cleveland Training School for Nurses, where he was dean for 10 years. He wrote *Twelve Months of Surgery; Loiterings in Europe*, etc.

BIGGAR, Joseph Gillis, Irish politician: b. Belfast, 1828; d. London, 1890, Feb. 19. He succeeded his father in mercantile business in 1861; entered politics in 1869; and was elected to Parliament for county Cavan in 1874. He was a member of the Supreme Council of the Irish Republican Brotherhood. When Charles Stewart Parnell entered Parliament in 1875 Biggar ranged himself on the side of that leader. He took an active part in the Land League movement. In 1877 he was expelled from the Fenian organization, and in 1880 delivered aggressive speeches in Ireland. He was one of the few prominent Irish members who were never in prison.

BIGGE, *bĭg*, Sir Arthur John, English soldier: b. Stamfordham, 1849, June 18. He entered the Royal Artillery in 1869; served in the Zulu war, 1878–9, with distinction, and in 1879 was appointed aide-de-camp to

Maj.-Gen. Sir Evelyn Wood. In 1880 he became groom-in-waiting to the queen and assistant private secretary; in 1881 equerry in ordinary, from 1895–1901 private secretary and equerry to the queen, and since 1901 private secretary to the Prince of Wales.

BIGGS, Asa, American jurist: b. Williamston, N. C. 1811, Feb. 4; d. Norfolk, Va., 1878, March 6. He received an academical education, and was admitted to the bar in 1831. He was a member of the North Carolina Constitutional Convention in 1835; was elected to the State legislature in 1840, 1842, and 1844; was a member of the commission appointed to revise the State statutes in 1850, and was again sent to the legislature in 1854. In 1854 he was elected United States senator; resigned in 1858, and was appointed judge of the United States District Court of North Carolina.

BIG'LOW, William, American educator and poet: b. Natick, Mass., 1773, Sept. 22; d. Boston, 1844, Jan. 12. He was first established as a teacher in Salem, and in 1799 delivered a poem on education before the Phi Beta Kappa Society at Cambridge. He then took charge of the Latin School, Boston, preaching occasionally, writing for different periodicals, and publishing educational text-books. Here he fell a victim to intemperate habits and was compelled to retire to his home in Natick. In this state of his fortunes it was his habit to lounge about the newspaper offices at Boston, write poetry for his friends, the editors, while the humor lasted, and then return to his rural retreat. He taught, also, a village school in Maine, and in the latter part of his life was employed as a proof-reader in the university printing office at Cambridge. He had a genial and pleasant humor, and was a ready versifier, as well as an agreeable prose-writer. His *Cheerful Parson* and others of his songs, were much admired by his contemporaries and are well worthy of remembrance. He also published, in 1830, a *History of the Town of Natick*, and one of Sherburne, Mass. But his best and most numerous writings were in periodicals, the *Village Messenger*, of Amherst, N. H., which he edited in 1796, the *Federal Orrery*, and *Massachusetts Magazine*.

BIGLOW PAPERS, two series of satirical poems written by James Russell Lowell, the first appearing in 1848; the second in 1866. They were written in Yankee (New England) dialect, and attracted much attention by their humor. The first series was directed against the Mexican war and slavery; the second dealt with the Civil War.

BIGNON, Louis Pierre Edouard, *bēn-yŏn, loo-ē pē-är ā-doo-är*, French historian and statesman: b. La Meilleraye, 1771, Jan. 3; d. Paris, 1841, Jan. 5. He entered the National Assembly in 1817; became a peer of France in 1837, and wrote a *History of France* (7 vols., 1827–38). He received from Napoleon I. a bequest of $20,000.

BIGNONIACEÆ, *big-nō-ni-ā'sē-ē:* nat. ord. of exoge-

nous plants, containing trees, shrubs, and herbaceous plants, generally with compound leaves. The flowers are usually showy, and are among the most striking ornaments of tropical forests. The corolla is of one petal, generally more or less trumpet-shaped and irregular.

There are four genera and species in the s. United States: the Bignonia (*B. capreolata*) and Trumpet Flower (*Tecoma radicans*), climbers, with orange or red flowers; the Catalpa Tree or Indian Bean (*Catalpa bignonioides*), with showy white and purple flowers, much cultivated at the north; and, of a sub-family, the Unicorn Plant (*Martynia proboscidea*), s. Illinois, s., and s.w.—the beaked and crested fruit (sometimes pickled), with long recurved hook, looking like a legless bird. The most of the family are tropical, in many cases noble trees, and some of them afford valuable timber, among which are *Bignonia lencoxylon*, a tree of Jamaica, the green or yellow wood of which is sometimes brought into the market under the name of Ebony; and the Ipe-tobacco and Ipe-una of Brazil, species of the same genus, the former of which is used for ship-building, and the latter is accounted the hardest timber in Brazil. Not a few are climbing shrubs, and the tough shoots of *Bignonia Cherere* are used for wicker-work in Guiana. *Bignonia alliacea*, a native of the West Indies, is remarkable for its long alliaceous smell; the leaves of *Bignonia Chica* afford the red coloring matter called Chica (q.v.).—The *Crescentiaceæ* abound chiefly in Mauritius and Madagascar. The Calabash tree (q.v.) is the best-known example.—The *Pedaliaceæ* are tropical or subtropical; many of them herbaceous plants. The most important is SESAMUM (q.v.). The fleshy sweet root of *Craniolaria annua* is preserved in sugar as a delicacy by the Creoles.

BIGOT, n. *bĭg′ŏt* [F. *bigot*—from It. *bigotto*, a bigot; *bizioco*, a hypocrite—from *bigio*, gray—applied to certain secular aspirants to superior holiness of life in the thirteenth century]: one who is obstinately and blindly attached to a particularly religious belief, to a party, or to an opinion; a blind zealot. BIG′OTED, a. unreasonably attached to. BIG′OTEDLY, ad. *-ĕd-lĭ*. BIGOTRY, n. *bĭg′ŏt-rĭ*, blind zeal in favor of something. *Note.*—BIGOT appears to have been a nickname and term of derision as early as the end of the twelfth century on the Continent, and probably originated among the Low Ger. races.—SYN. of 'bigot': enthusiast; fanatic; visionary; zealot.

BIG RAPIDS: city in Mecosta co., Mich., on the Muskegon river; and on the Grand Rapids and Indiana, the Chicago and West Michigan, and the Detroit Lansing and Northern railroads; 65 m. n. of Grand Rapids. It is surrounded by a farming country, and has water-power, Holly water-works, a heavy lumber trade, foundries, mills, machine shops, furniture factories, and other important manuf. interests. It has daily and weekly papers, national and savings banks, public schools and churches.

It was incorporated 1869 and is the seat of Ferris Institute. Pop. (1910) 4,519.

BIG SANDY RIVER: fine navigable affluent of the Ohio, flows through extensive beds of coal. It is formed by the junction of two branches—the e. and w. forks—both of which rise in Virginia. The latter traverses several counties of Kentucky, and the former is, during the latter part of its course, the boundary between Ky. and W. Va. Their united waters lose themselves in the Ohio, nearly opposite Burlington, O.

BIHACH, *bē-hâch'*, or BICHACZ': strong fortress-town of Bosnia, on the Una, near the Croatian frontier; lat. 44° 43′ n., and long. 15° 53′ e. It has been the scene of frequent contests during the Turkish wars.—Pop. 3,000.

BIJANAGHUR, *bēj-nâ-gŭr:* a ruined city within the presidency of Madras.

BIJAPORE, *be'ja-pôr':* town of India, in Guzerat, in the Guicowar's territory, on the route from Mhow to Deese, 200 m. n.w. from Mhow, 60 m. s.e. from Deesa. Pop. 12,000.

BIJAPUR: see BEJAPUR.

BIJAWUR, *be-jaw'er:* petty native state in the Bundelcund Agency; 974 sq. m. Pop. 113,000.

BIJBAHAR, *bēj'bâ-har':* one of the best-known towns in Cashmere, though not one of the most populous. It is on the banks of the Jhelum, about 25 m. s.e. of the metropolis; lat. 33° 47′ n. long 75° 13′ e. The only particular worthy of notice is a wooden bridge across the Jhelum, which, notwithstanding its simplicity, has endured for centuries, in consequence of the tranquil and equable weather of the valley.

BIJNOUR, *bij'nowr:* town of India, chief town of the British dist. of B., Northwest Provinces, 29° 22′ n. lat.; 78° 11′ e. long. It is on the route from Moradabad to Mozuffurnuggur, 31 m. e. from Mozuffurnuggur. Pop. about 13,000.

BIJNOUR, the dist., has 1,868 sq. m. Pop. about 800,000.

BIJOU, *bē-zhô'* [F.—plu. *bijoux*]: a jewel; a trinket. BIJOUTERIE, n. *bē-zhôt'rĭ*, jewelry; the making or dealing in trinkets or jewelry.

BIJUGATE, a. *bī'jû-gāt* [L. *bĭjŭgus*, yoked two together —from *bis*, twice; *jugum*, a yoke]: in *bot.*, having two pairs of leaflets on a pinnate leaf.

BIKANIR, BEEKANEER, or BICANERE, *bik'ă-nēr':* town of India, cap. of a Rajpoot state of the same name; n. lat. 28°, e. long. 73° 22′; 1,175 m. n.w. of Calcutta, in a singularly desolate tract, hard, stony, and utterly unfit for cultivation. The town is surrounded with a battlemented wall, and has a very imposing appearance, but the people are found exceedingly filthy. Immediately to the n.e. is a detached citadel, of which the rajah's residence occupies the greater part. Pop. (by census 1881) 43,283; (1891) 56,252; (1901) 53,075.

BIKANIR, the state, extends from n. to s. abt. 160 m., and from e. to w. abt. 200 m.; 22,340 sq. m. The climate is remarkable for extreme changes of temperature, the night being often very cold, and the day very hot. In the beginning of Feb. ice is formed on the pools; and in the beginning of May the thermometer registers 123° F. in the shade. In the beginning of Nov., according to Elphinstone's experience, each period of 24 hours, according as the sun was above or below the horizon, presented such extremes of heat or cold as often to be fatal to life. The majority of the population are by descent Jauts, a people inhabiting from a very remote period a great extent of country between the Himalaya and the Indian Ocean. The rajah and dominant race are Rajpoots; Brahmans are numerous. There are many Jains. Though the people find their principal resource in pasturage, yet water is remarkably scarce; there is not one perennial stream; while wells are brackish, scanty and precarious, averaging perhaps 250 ft. in depth; and even the lakes left by the periodical rains are generally saline. In 1868–9, nearly half the population were destroyed by drought. The burning of widows was in former times extremely prevalent in Bikanir. The military force amounts to about 5,000. Pop. 831,955.

BIKH: see ACONITE.

BILABIATE, a. *bī-lā'bĭ-āt* [L. *bis*, twice; *labĭŭm*, a lip]: in *bot.*, having the mouth of any tubular organ divided into two principal portions, termed lips.

BILAMELLAR, a. *bī'lăm-ĕl'lėr* [L. *lamel'la*, a thin plate]: in *bot.*, having two lamellæ or flat divisions; formed of two plates: also BILAMELLATE, a. *bī'lăm-ĕl'lāt*, in same sense.

BILAMINAR, a. *bī-lăm'ĭ-nėr* [L. *bis*, twice; *lamĭna*, a plate, a leaf]: composed of two thin plates or layers; applied to the twofold layers or structures of cells of the *blastoderm*. See ECTODERM.

BILANDER, or BILANDRE, *bĭl'an-der:* a small two-masted merchant-vessel, distinguished chiefly by a peculiar shape and arrangement of the mainsail; probably French in origin. Few are now in use.

BILATERAL, a. *bī-lăt'ėr-ăl* [L. *bis*, twice; *lătus*, a side; *lătĕris*, of a side]: in *bot.*, arranged on or towards opposite sides. BILATERAL SYMMETRY, where the organs of a body are arranged more or less distinctly in pairs; a symmetrical arrangement of organs on each side of a middle line.—See SYMMETRY, BILATERAL.

BILBAO, *bil-bâ'o:* seaport town of Spain, cap. of the province of Vizcaya (Biscay); in a mountain gorge on the Nervion, about 6 m. from its mouth at Portugalete; lat. 43° 14′ n., long. 2° 56′ w. B. is well built; the principal streets are straight, and the houses substantial. Four bridges, one of iron, opened 1868, and a stone bridge of the 14th c., cross the river which divides the old town from the new.

There are several fine public walks, numerous fountains, but no public buildings of any note. The city is commercial. It has many extensive rope-walks and manufactures of hardware, leather, hats, tobacco, and earthenware. There are also docks for building merchant-vessels, and in the vicinity are iron and copper mines It is one of the most flourishing seaports of Spain, though its accommodation for shipping is defective; various harbor improvements, however, have recently been carried out, including a breakwater and mole. The imports consist chiefly of cotton and woolen manufactures, colonial produce, fish, jute, spirits, hardwares, machinery, railway materials, etc.; and the exports, of wool, iron, fruits, oil, flour and grains, wines, madder, minerals, licorice, etc. B. was founded 1300 by Diego Lopez de Haro, under the name of Belvao, i. e., 'the fine fort,' and being well situated, and little disturbed by the civil wars of Spain, it soon attained great prosperity. In the 15th c., it was the seat of the most authoritative commercial tribunal in Spain. It suffered severely in the wars with France, first in 1795, and again in 1808, when 1,200 of its inhabitants were slaughtered in cold blood. During the Carlist struggles, B. was often besieged, last in 1874. Pop. (1900) 83,306.

BILBERRY, n. *bĭl'bĕr-rĭ* [AS. *bleo*, blue: Dan. *blaabaer*, blueberry]: foreign name for *Vaccinium myrtil'lus;* here, the Bog Bilberry (*V. uliginosum*). B. includes cranberry, blueberry, etc.; ord. *Ericaceæ*, Heath family.

BIL'BILIS: old Iberian city of Spain, about 2 m. e. from the modern town of Calatayud, in the province of Saragossa, known chiefly as the birthplace of the poet Martial, but also for its highly-tempered steel blades. Quintus Metellus won a victory over Sertorius here; and B., under the Romans, was a municipal town with the surname of Augusta. Several of its coins, struck during the reigns of Augutus, Tiberius, and Caligula, are extant —some in the British Museum.

BILBOES, n. plu. *bĭl'bōz* [*Bilboa* or *Bilbao*, in Sp., where made: Dut. *boeye;* L. *boiæ*, a shackle: compare Gael. *buaile-bo*, a cow-stall]: in *OE.*, among *mariners*, a sort of stocks or wooden shackles for the feet, used for offenders; fetters, consisting of long bars or bolts of iron, with shackles sliding on them, and a lock at one end. When an offender on shipboard is 'put in irons,' it implies that B. are fastened to him, more or less ponderous according to the degree of his offense. The B. clasp the ankles in some such way as handcuffs clasp the wrist. BILBO, n. *bĭl'bō* [*Bilboa*]: in *OE*, a sword.

BIL'COCK: see RAIL.

BILDERDIJK, *bil-der-dīk'*, WILLEM: 1756, Sept. 7—1831, Dec. 18; Dutch poet and philologist; b. Amsterdam. While studying law at Leyden, and afterwards when practicing at the Hague, he assiduously studied literature and poetry. On the invasion of Holland by the French, he went to Brunswick, and afterwards visited London, where

he supported himself by lecturing and teaching. In 1806, he returned to Holland, where he was received as one who had done his country honor; and the newly-elected king of Holland (Louis Bonaparte) appointed him pres. of the Institute of Amsterdam, just then organized after the fashion of the one at Paris, and also made him his own instructor in the Dutch language. B. afterwards resided at Leyden, and then at Haarlem, where he died. His contributions to poetic literature were very numerous; but though they contain many beauties, they show little originality or imagination. With his poetical pursuits he combined Dutch philology, in which department his writings are valuable in exposition of the older Dutch literature.

BILE, n. *bīl* [F. *bile*—from L. *bilis*, bile]: a thick, yellow, bitter liquor separated in the liver, and collected in the gall-bladder; gall, ill humor. BILIOUS, a. *bĭl-yŭs*, having excess of bile; ill-tempered. BIL'IOUSNESS, n. BIL'IARY, a. *-yĕr-ĭ*, of or relating to bile. BILE-DUCT, n. a vessel or canal conveying bile from the gall-bladder to the intestine. BILIN, n. *bĭl'ĭn*, a gummy, pale-yellow mass, said to be the principal constituent of the bile.

BILE, n. *bīl* [AS. *byl*, a blotch], more correctly BOIL: in *prov.*, and *OE.*, a soft tumor upon the flesh.

BILE: a fluid secreted from the blood by the liver. One part of it is destined to serve in the process of digestion; the other to be eliminated from the system. It is colored yellow in man; that of graminivorous animals seems colored by the leaves they feed upon. The primary cells of the liver (the hepatic cells) separate the B. from the blood of the portal vein, and discharge it into small ducts, which unite to form larger ones, and eventually the right and left hepatic ducts. The latter unite to form the common hepatic duct, which is soon joined by that of the gall-bladder (the cystic duct). This junction forms the common B. duct, which pierces the second part of the duodenum, and running obliquely in its wall for a short distance, opens on its mucous surface.

The secretion of B. is constantly going on, and if there is food in the intestine, the bile mingles with it, and dissolves the fatty portions, preparatory to their absorption, the excrementitious portion of the B. passing out of the body with the other indigestible materials. The flow of B. is continuous, but is most marked a few hours after a meal. When the flow is slight, the formation continuing, the B. ascends the cystic duct, and is stored in a small flask-like bag (the gall bladder) situated under the liver.

If, from any cause, the elements of the B. are in excess in the blood, or should the liver suspend the function of secreting it, not only is the digestion of fats less perfectly formed, but the general health suffers from the impure condition of the blood, and the patient is said to be *bilious*. On the other hand, the B. may be secreted, but its

escape interfered with, and then its reabsorption will produce jaundice (q.v.). Its solid portions, especially the cholesterin, may be in excess, solidify, and produce biliary calculi or gall-stones. See CALCULUS.

In *chemical composition*, B. is essentially a soap analogous to resin-soap, and as obtained from the ox, contains in 100 parts,

Water, ...	90.44
Biliary and fatty bodies, including resinoid acids, . .	8.00
Mucus, ...	0.30
Watery extract, chlorides, phosphates, and lactates,	0.85
Soda, ...	0.41

The soap is formed from the union of the resinoid acids (*Glycocholic* and *Taurocholic Acids*) with the soda.

B. has a specific gravity of about 1.005, though that stored in the gall-bladder has a specific gravity of about 1.030. It contains about 2 per cent. of solids, chiefly sodium salts of the bile acids, the larger proportion being glycocholate of sodium, the taurocholate of sodium being present in very small amount in man. It is interesting to observe that the B. of salt-water fishes contains potash in place of soda; although, from their being surrounded by much common salt (chloride of sodium) in the sea-water, we should naturally expect to find soda in abundance; and the B. of land and fresh-water animals contains soda, while considering diet and habitat, potash might more naturally be looked for in largest quantity. Beyond assisting in the solution of fats, B. plays but a subordinate part in the process of digestion. Physiologists regard it as essentially a waste product, formed during the process of tissue change (metabolism) in the liver—an excretion rather than a secretion, and intended to be discharged from the system with the contents of the bowel.

BILGE, n. *bĭlj* [prov. Sw. *bälga*, to fill one's belly: Gael. *bulg*, a belly: Icel. *bulki*, a hump: Dan. *bulk*, a lump—a different spelling of BULGE]: the swelled-out or bellied part of a cask or ship; the breadth of a ship's bottom on which she rests when aground; also called BILAGE, *bĭl'āj*. BILGE, v. to have a fracture in a ship's bottom; to spring a leak—*lit.*, so as to fill its belly. BIL'GING, imp. BILGED, pp. *bĭljd*. BILGE-PUMP, pump employed to draw off bilge-water. BILGE-WATER, water lying on a ship's bottom or bilge. BILGEWAY, n. the foundation of the cradle supporting a ship upon the sliding-ways during building and launching.

BILGE, *bĭlj* (sometimes spelled BULGE): the part of the bottom of a ship nearest to the keel, and always more nearly horizontal than vertical. A ship aground usually rests on the keel and one B. The name of *bilge-water* is given to any rain or sea water that trickles down to the B. or lowest part of a ship, which, being difficult of access, becomes dirty and offensive.

BIL'IARY CAL'CULI: see CALCULUS.

BILIFULVIN, n. *bĭl'ĭ-fŭl'vĭn* [L. *bilis*, bile; *fulvus*, tawny, yellow]: the coloring matter of the bile, especially that of the ox; same as *bilirubin*.

BILIM'BI: see CARAMBOLA.

BILIN, *be-lĕn*: town of Bohemia, beautifully situated in the valley of the Bila, 17 m. w. of Leitmeritz; famous for its mineral springs, which are much frequented, and from which much water is exported. It has a manufactory of cottonyarn, and two castles, old and new. In its vicinity is a remarkable isolated clinkstone rock, called Borzenberg, or Biliner Stein. Pop. (1900) 7,808.

BILINGSGATE, more commonly BILLINGSGATE, which see.

BILINGUAL, a. *bĭ-lĭng'gwăl* [L. *bis*. twice; *lingua*, a tongue]: in two languages. BILIN'GUOUS, a. *-gwŭs*, speaking two languages.

BILIOUS FEVER: see LIVER.

BILIRUBIN, n. *bĭl'ĭ-rō'bĭn* [L. *bīlis*, bile; *rubens*, growing red—from *ruber*, red]: the red coloring matter present in bile. BIL'IVER'DIN, n. *-vĕr'dĭn* [F. *vert*, green—from L. *vĭrĭdis*, green]: a green coloring matter in bile.

BILITERAL, a. *bī-lĭt'ĕr-ăl* [L. *bis*, twice; *litĕra*, a letter]: of two letters.

BILK, v. *bĭlk* [Sw. *balka*, to partition off—another form of BALK]: to defraud; to cheat; to leave in the lurch. BILK'ING, imp. BILKED, pp. *bĭlkt*.

BILL, n. *bĭl* [AS. *bil;* Ger. *beil*, an ax: Dut. *bille*, a stone-mason's pick: Icel. *bilda*, an ax: Gael. *buail*, to strike]: an instrument for hewing; an anc. military weapon; the beak of a fowl or bird. BILLED, a. *bĭld*, furnished with a bill. BILL-BOARD, in *shipbuilding*, an iron-covered board or double planking, which projects from the side of the ship and serves to support the inner fluke of the anchor. BILL-HOOK, a hooked instrument for cutting hedges, pruning, etc.

BILL, n. *bĭl* [mid. L. *bulla*, a seal; *billa*, a writing: Dut. *biljet*, a note]: originally, any sealed writing; in modern usage—an account for goods or services; a printed placard or advertisement; in *law*, a declaration in writing of some fault or wrong; a written promise to pay money in a certain time (in the United States called a promisory note); a form or draft of a proposed law before parliament; a written list of particulars in law, in commerce, or in other social usages; in *OE.*, a physician's prescription. BILL-BROKER, one who negotiates the discounting of bills. BILL OF EXCHANGE, a written order on a person in a distant place requesting him to pay money to another—the person who draws or writes out the *bill* is called the *drawer*, the person requested to pay the money the *drawee*, the person to whom the money is payable the *payee*. BILL OF PAINS AND PENALTIES, a bill to inflict certain punishments for

treason and felony, to meet a special case. BILL OF FARE, a list of articles ready for food. BILL OF ENTRY, in *com.*, a written account of goods entered at the custom-house. BILL OF LADING, a written account of goods shipped by a person on board an outward-bound vessel, and signed by the master or captain. BILL OF HEALTH, a certificate of the health of a ship's crew. BILL OF INDEMNITY, a bill to release government or its agents from the consequences of an irregular act committed under exceptional and necessary circumstances. BILL OF MORTALITY, a return of deaths in any place. BILL OF PARCELS, a written price list sent with goods purchased. BILL OF RIGHTS, a summary or list of the rights and privileges claimed by a people—in *Eng. hist.*, specially applied to the declaration of 1688–89, presented by the lords and commons to the Prince and Princess of Orange, 13th February: in the United States, the constitutions of the various states mostly contain full declarations of personal rights. BILL OF SALE, a written inventory or list of goods given by the borrower of money to the lender, as a security, empowering their sale by the lender if the money is not repaid at a given time; a writing under seal, evidencing a grant or assignment of chattels personal. BILL OF EXCEPTIONS, a written statement of errors in law tendered to the presiding judge before a verdict is given. BILL IN CHANCERY, a written statement put in or filed in the court or chancery. TRUE BILL, an attested written statement by a grand jury of sufficient evidence against a prisoner to warrant a trial. BILL CHAMBER, in *Scot.*, a particular department of the court of session for dealing with certain written documents: see COURT OF SESSION: JUDGE'S CHAMBERS. BILL OF SUSPENSION, in *Scot.*, a written application or appeal from a lower to a higher court, to prevent execution of a sentence in a criminal trial. BILL OF DIVORCE, in the *Jewish law*, a certain form of writing given by a husband to a wife by which his marriage with her was dissolved. BILL-STICKER, or BILL-POSTER, one who posts placards, etc. *Note.*—'Proposed laws before either house of parliament or of any legislature are called *bills* while they are under consideration, and after they have been agreed to by both houses. *Bills* become *acts* only after they have been signed by the executive.'

BILL, v. *bĭl* [from *bill*, a beak: Gael. *bile*, a lip]: to caress as doves joining bills; to be fond. BILL'ING, imp. BILLED, pp. *bĭld*. To BILL AND COO, love-making, expressed somewhat after the manner of doves.

BILL: a paper, written or printed, giving a statement of the particulars of an account or action. A printed proclamation, an advertisement, an act of Congress or parliament, or a tradesman's account is a bill.

In Legislation.—A term used to signify a special act passed by the legislature in the exercise of a *quasi* judicial power. Thus, bills of attainder, bills of pains and penalties are spoken of. The draft of a law submitted to the

consideration of a legislative body for its adoption or rejection. The Constitution of the United States provides that all bills for raising revenue must originate in the House of Representatives, but the Senate may propose or concur with amendments as on other bills. Every bill before it becomes a law must be approved by the President of the United States, or within 10 days returned, with his objections, to the House in which it originated. Two-thirds of each House may then enact it into a law. These provisions are copied in the constitutions of a majority of the States.

Bill of Adventure.—A writing signed by a merchant, in which he states that certain goods shipped in his name really belong to another person, at whose risk the adventure is made.

Bill of Attainder.—A bill declaring that the person named in it is attainted and his property confiscated. The Constitution of the United States declares that no State shall pass any bill of attainder. During the Revolutionary War, bills of attainder and *expost facto* acts of confiscation were passed to a wide extent. The evils resulting from them, in times of cooler reflection, were discovered to have far outweighed any imaginary good.

Bill of Costs.—A statement of the items which form the total amount of the costs of a suit or action. This is demandable as a matter of right before the payment of the costs.

Bill of Credit.—A letter sent by an agent or other person to a merchant, desiring him to give the bearer credit for goods or money. It is frequently given to one about to travel and empowers him to take up money from the foreign correspondents of the person from whom the bill or letter of credit was received.

Bill of Entry.—A written account of goods entered at the custom-house, whether imported or designed for exportation.

Bill of Exceptions.—A bill of the nature of an appeal from a judge who is held to have misstated the law, whether by ignorance, by inadvertance, or by design. This the judge is bound to seal if he be requested by the counsel on either side to do so. The exceptions noted are reviewed by the court to which appeal is taken, and if the objections made to the rulings of the trial judge are well founded, the finding in the case is reversed, and usually the cause is remanded for a new trial.

Bill of Exchange.—A bill or security originally introduced for enabling a merchant in one country to remit money to a correspondent in the other. It is an open letter of request from one man to another, desiring him to pay to a third party a specified sum and put it to the account of the first.

Bill of Health.—A certificate given to the master of a ship clearing out of a port in which contagious disease is epidemic, or is suspected to be so, certifying to the state of health of the crew and passengers on board.

Bill of Indictment.—A written accusation made against

one or more persons having committed a specified crime or misdemeanor. It is preferred to and presented on oath by a grand jury. If the grand jury find the allegations unproved, they ignore the bill, giving as their verdict, 'Not a true bill'; if, on the contrary, they consider the indictment proved, their verdict is a 'True bill.'

Bill of Lading.—A document by which the master of a ship acknowledges to have received on board his vessel in good order and condition (or the reverse), certain specified goods consigned to him by some particular shipper, and binds himself to deliver them in similar condition, —unless the dangers of the sea, fire, or enemies prevent him,—to the assignees of the shipper at the point of destination, on their paying him the stipulated freight.

The bill of lading should contain the name of the shipper or consignor; the name of the consignee; the name of the vessel and her master; the places of shipment and destination; the price of the freight, and in the margin, the marks and numbers of the things shipped. It is usually made in three or more original parts, one of which is sent to the consignee with the goods, one or more others are sent to him by different conveyances, one is retained by the merchant or shipper, and one should be retained by the master. It is assignable by indorsement, and the assignee is entitled to the goods, subject to the shipper's right of stoppage *in transitu* in some cases, and to various liens. It is considered to partake of the character of a written contract, and also that of a receipt. In so far as it admits the character, quality, or condition of the goods at the time they were received by the carrier, it is a mere receipt, and the carrier may explain or contradict it by parol; but as respects the contract to carry and deliver, it is a contract, and must be construed according to its terms. 3 N. Y. 322; 6 Mass. 422. Under the admiralty law of the United States, contracts of affreightment entered into with the master in good faith and within the apparent scope of his authority as master, bind the vessel to the merchandise for the performance of such contracts in respect to the property shipped on board, irrespective of the ownership of the vessel, and whether the master be the agent of the general or special owner, but bills of lading for property not shipped, and designed to be instruments of fraud, create no lien on the interest of the general owner, although the special owner was the perpetrator of the fraud. Under a bill of lading in the ordinary form, having no stipulation that the goods shipped are to be carried on deck, there is a contract implied that the goods shall be carried under the deck, and parol evidence to the contrary will not be received. 14 Wend. 26. But evidence of a well-known and long-established usage is admissible, and will justify the carriage of goods in that manner.

Bill of Rights.—A bill which gave legal validity to the claim of rights, that is, the declaration presented by the Lords and Commons to the Prince and Princess of Orange

on Feb. 13, 1688, and afterward enacted in Parliament when they became king and queen. It declared it illegal, without the sanction of Parliament, to suspend or dispense with laws, to erect commission courts, to levy money for the use of the Crown on pretense of prerogative, and to raise and maintain a standing army in the time of peace. It also declared that subjects have a right to petition the king, and, if Protestants, to carry arms for defense; also that members of Parliament ought to be freely elected and that their proceedings ought not to be impeached or questioned in any place out of Parliament. It further enacted that excessive bail ought not to be required, or excessive fines imposed, or unusual punishment inflicted; that juries should be chosen without partiality; that all grants and promises of fines or forfeitures before conviction are illegal; and, that, for redress of grievances and preserving of the laws, Parliament ought to be held frequently. Finally it provided for the settlement of the Crown. In the United States, a bill of rights, or, as it is more commonly termed in this country, a declaration of rights, is prefixed to the constitutions of most of the States.

Bill of Sale.—A deed of writing, under seal, designed to furnish evidence of the sale of personal property. It is necessary to have such an instrument when the sale of property is not to be immediately followed by its transference to the purchaser. It is used in the transfer of property in ships, in that of stock in trade, or the good-will of a business. It is employed also in the sale of furniture, the removal of which from the house would call attention to the embarrassed circumstances of its owner; hence the statistics of the bills of sale act as an index to measure the amount of secret distress existing in times of commercial depression. In not a few cases bills of sale are used to defeat just claims against the nominal or real vendor of the goods transferred.

Bill of Sight.—A form of entry at the custom-house by which one can land for inspection, in presence of the officers, such goods as he has not had the opportunity of previously examining, and which, consequently, he cannot accurately describe.

Bill of Stores.—A license granted at a custom-house to merchant-ships to carry stores and provisions for their voyage duty-free.

Bill of Sufferance.—A coasting license to trade from port to port without paying customs duty, the dutiable goods being loaded and landed at sufferance wharfs.

BILL, in Natural History: the hard, horny mouth of Birds (q.v.). It consists of two *mandibles*, an upper and a lower, into which the upper and lower jaws are respectively produced, all appearance of lips being lost. It is not furnished with proper teeth, although rudiments of them have been observed in some of the parrot tribe in the fetal state, and the marginal laminæ with which the bills of many water-fowl are furnished partake of the same char-

acter, being secreted by distinct pulps. The resemblance of these marginal laminæ to teeth is particularly marked in the Goosander (q.v.). The bills of birds differ much, according to their different habits, and particularly according to the kind of food on which they are destined to live, and the manner in which they are to seek it. In birds of prey, the B. is strong: the upper mandible arched or hooked, and very sharp; the edges sharp, often notched, and the whole B., or *beak*, adapted for seizing animals, and tearing and cutting to pieces their flesh. A powerful, short, hooked beak, sharp-edged and notched, indicates the greatest courage and adaptation to prey on living animals. The beak of the vulture is longer and weaker than that of the eagle or falcon. In birds which feed on insects and vegetable substances, the hooked form of the B. is not found, or is in a very inferior degree; those birds which catch insects on the wing, such as the Goat-suckers, are remarkable for the deep division of the B., and their con-

Bill of Goat-sucker (Insect-eating bird).

sequently wide gape, and an analogous provision to facilitate the taking of prey is to be observed in herons, kingfishers, and other fishing-birds; but the object is attained in their case by the elongation of the B., whereas birds which catch insects on the wing have the B. very short. Birds which feed chiefly on seeds have the B. short and strong, for bruising them: while the B. of insectivorous birds is comparatively slender. Many aquatic birds have broad and comparatively soft and sensitive bills, with laminæ on the inner margin for straining the mud from which much of their food is to be extracted: other birds, as snipes, avocets, etc., seeking their food also in mud, have slender bills of remarkable sensibility. The modifications of form are very numerous, and the peculiarities of the bills of toucans, hornbills, spoonbills, crossbills, parrots, humming-birds, etc., are very interesting, and intimately connected with the habits of the different creatures (See these titles.) At the base of the upper mandible a portion of the B. is covered with a membrane called the *cere* (Lat. *cera*, wax, from the waxy appearance which it presents in some fal-

Bill of Bunting (Seed-eating bird).

cons, etc.), which in many birds is naked, in others is feathered, and in many is covered with hairs or bristles. The nostrils are situated in the upper mandible, usually in the cere, but in some birds they are comparatively far forward, and in some, as puffins, they are very small, and placed so near the edge of the mandible as not to be easily detected. They are more or less open, or covered with membrane, or protected by hairs or feathers. Besides the principal use of bills for seizing and dividing or triturating food, they have a variety of functions, as dressing or preening the feathers, constructing nests, etc. They are also the principal instruments used by birds in their combats.

The mouths of some fishes and reptiles assume a character somewhat analogous to that of the B. of birds.

BILL, EXCHEQUER: see EXCHEQUER BILLS.

BILLARDIERA, *bĭl-lar'dĭ-ā'ra*, or AP'PLEBERRY: genus of twining Australian shrubs of the nat. ord. *Pittosporaceæ* (q.v.). They have simple alternate evergreen leaves, and axillary pendulous flowers. The flowers have a calyx of five sepals, and a bell-shaped corolla of five petals. The fruit is a soft, spongy pericarp, with inflated cells, and many seeds, which lie loose in the cells, terminated by the style, and generally bluish when ripe. It is eatable, although not destitute of a resinous character, which prevails in the order. *B. longiflora* and *B. ovalis*, the former with nearly globose, the latter with oval fruit, are ornaments of greenhouses. The fruit of *B. mutabilis* is larger, cylindrical, and of a pleasant subacid taste.

BILLAUD-VARENNE, *be-yō'-vâ-rĕn'*, JEAN NICOLAS: d. 1819: leader in the Reign of Terror in the French Revolution; was active in the September massacres; entered the Convention, where he distinguished himself by violence against the king and the royal family, and his general cruelty. He was the author of the Revolutionary Tribunal, and it was on his proposal that the Duke of Orleans, the queen, and a host of others became its victims. He joined in the end in bringing about the fall of Robespierre, but could not ward off his own accusation as one of the Terrorists, and was transported to Cayenne, where he lived about 20 years, rejecting the pardon offered by the First Consul. In 1816, he came to New York, but was coldly received, and sought asylum in Hayti, where he died.

BILL-BROKERS: persons who, being skilled in the money-market, the state of mercantile and personal credit, and the rates of exchange, engage, either for their own profitable adventure, or that of their employers, in the purchase and sale of foreign and inland bills of exchange, and promissory notes. They are to be distinguished from discount-brokers, or bill-discounters, whose business consists in discounting bills of exchange and notes which have some time to run before they come due, by means of the funds, or on the faith of the credit of capitalists or other persons having the command of money. See BROKER. BILL OF EXCHANGE. PROMISSORY NOTE.

BILLET, n. *bĭl'lĕt* [F. *billet*, ticket, diminutive of BILL 2]: a small letter; a ticket directing soldiers where to lodge: V. to quarter soldiers. BIL'LETING, imp. BIL'LETED, pp.

BILLET, n. *bĭl'lĕt* [F. *billot*, a stick or log of wood cut for firewood—from *bille*, a log of wood ready for sawing into planks]: a small log of wood for firewood; in *arch.*, a kind of molding: an ornament in the Norman style. It was formed by cutting a molding—generally a round molding—into notches, so that the parts left resembled billets of wood. When used in several rows, the billets and empty spaces are placed interchangeably.

BILLET, in Heraldry: a small oblong figure, sometimes taken to represent a brick, but more commonly *billets doux*. The latter interpretation, which is that of Guillim, is generally adopted by English heralds, and is supported by the authority of Colombiere. The former, which has the *Trésor Héraldique* and Sir George Mackenzie on its side, is strengthened by the fact that in German they are called *Schindeln*, shingles.

BILLET-DOUX, n. *bĭl'lā-dô'*, BILLETS-DOUX, n. plu. *bĭl'lāz-dô'*, as English pronunciation [F. *billet*, a letter; *doux*, sweet]: a short love-letter; a love-note.

BIL'LETING: in Britain, a mode of provisioning and lodging soldiers when not in camp or barrack. In the early English history, monarchs were often wont to quarter their troops on the monasteries. In later times the soldiers often compelled the inhabitants of towns to receive and support them; and the authorities were either unable or unwilling to prevent this. The Mutiny Act, 1689, put a stop to this pernicious practice, by declaring that no housekeepers should be compelled to accommodate soldiers except on some recognized and fairly administered system. In the U. S. the practice is regulated by the third amendment to the Constitution.

BILLIARDS, n. plu. *bĭl'yĕrdz* [F. *billard*—from F. *bille;* L. *bulla*, a bubble, a ball (another derivation is given, with a different meaning for the F. *billard*, viz., the stick or staff with which the ball is struck; allied to *billot*, a block or billet of wood)]: the generic name of

a group of games; is played in the United States usually on a 5x10 table, fitted on each side and at the ends with rubber acting as cushions. Ivory balls driven by a wooden cue and varying in size from 2 5-16 inches to 2 7-16 inches are generally used. The bed of the table is slate, from $1\frac{1}{4}$ to $1\frac{3}{4}$ of an inch in thickness, and covered, as is also the rubber, with green cloth. The body of the table and legs, and the rails, are made from various designs of wood.

The origin of the game of billiards is shrouded in mystery, but is known to have been played in a crude way since before the birth of Christ. It is mentioned in Shakespeare's *Anthony and Cleopatra* (1607), and it is now generally agreed that the immortal bard, in his researches for facts, had read of billiards before the birth of our Saviour. Cathire More, a sub-king of Ireland, as early as 148 A. D., speaks of billiards and billiard balls of brass. In the Confessions of St. Augustine, born 430 A.D., mention is made of the game of billiards. From this time until the end of the 14th century very little is known of the game. It is mentioned in Spencer's *Mother Hubbard Tales* (1591). About this time the French made it an indoor table game by playing it on a square table with pockets at each corner, and one in the center of each side, a little cone in the centre of the table called the 'king,' and an arch of ivory, known as the 'port.' Certain scores depended on passing the 'port' and touching the 'king.' As early as 1734, as stated in Seymour's *Court Gamester*, these features of the game had disappeared, and cues had begun to replace the 'mast' or 'mace' first used. Billiards came into fashion in the time of Louis XIV., whose physicians recommended him this kind of exercise after eating. Some profess to believe the game of English origin, as the earliest and fullest description of billiards is found in Cotton's *Complete Gamester* (1674). The bed of the table was then made of oak, sometimes marble. Slate beds were first used about 1827. The pockets of the tables at that time, called 'hazards,' were at first made of wooden boxes, nets being employed soon afterward.

The billiard table is said to have found its way into America through the Spaniards about 1570. At this time it was played in England, France, Germany, and other countries, but the size of the table and style of the game differed. The English style of table and game was first adopted by the Americans. Six by twelve, six-pocket tables and four balls (two reds and two whites) were used. Soon the tables were reduced in size from 6x12 to $5\frac{1}{2}$x11, then to about 5 feet wide by 10 feet long. Tables vary in measurements. All match and tournament games are now played on 5x10 tables, and are very popular in all leading public rooms and clubs throughout the United States, while the so-called $4\frac{1}{2}$x9 tables are almost exclusively used in private residences and in small cities and towns.

It is only in the last 50 years that billiard tables and

their paraphernalia, and billiard playing itself, have made giant strides. Until the year 1855, when Michael Phelan, the father of billiards, first introduced the celebrated combination cushions, made of rubber chiefly, the tools were necessarily crude and imperfect, and greatly retarded the progress of the players up to that period. Then was played the four-ball game on a 6x12, six-pocket table. Two red balls and two white balls were used. In the 'sixties the tables were reduced in size to 5½x11, but so fast did the professionals and amateurs improve their games under the improved condition of the table and tools, and in order to avoid the seeming monotony of long runs, it was found necessary to again reduce the size of the table, from pockets to carrom, to about 5 feet wide and 10 feet long, and change the style of game from four-ball to three-ball game. This was done early in the 'seventies. Experts soon became so proficient at this style of game as to render it necessary to place restrictions on the bed of the table by drawing lines first 8 inches, then 10, 12, 14, and finally 18 inches from the edge of the cushions the entire length and width of the table—called balk-line game. This method of restricting the professionals and leading amateurs in no wise does away with the beauties of the game, as the Massè, draw, follow, and combination cushion shots are left intact. The superb play of the professionals in this country and in France, where the same style of game is played, is due in a great measure to the improved construction of the beveled table, slabs, match rubber cushions, and to the ivory balls, cue, cue tips, and chalk.

Various are the styles of billiards played now, such as 'three-cushion carroms,' 'cushion carroms,' 'champions' game,' 'balk-line game,' and the regular three-ball game.

Pool may be said to be, broadly speaking, a branch of billiards, and is very popular with the masses. It lacks the skill and variety of billiards. Pool is played on a 5x10 or 4½x9, six-pocket table, and generally with gully attachments—a new device that rather adds to the popularity of the game. This gully is so placed under the table that all balls, when pocketed will drop into a basket at the foot of the table. The most popular of the various pool games is 'continuous pool,' played with 15 numbered balls and one plain white one—the cue ball. These 15 balls are arranged in a triangle form at the foot of the table. The player's object is to drive as many of the numbered balls successively into one or other of the pockets as he can, subject to certain rules and regulations. There are various other kinds of pool games—'American,' 'pyramid,' 'Chicago,' 'forty-one,' and others. For a complete list of these various styles of games, also all styles of billiards, with the rules governing them, the reader is referred to the *Handbook of Standard Rules of Billiards and Pool.* This handbook also gives valuable hints on the care of tables, balls, cues, etc.

One of the most important parts that go to make bill-

iard playing complete is the cue and cue-tip. The size and weight of the cue is a matter of individual judgment, but nearly all professionals and the best amateurs prefer one that weighs from 19 to 22 ounces, with the tip of the cue about a half inch full in diameter. The cue-tip is one of the leading, if not the leading, factor in billiard playing. Many public and private games are lost because of the imperfect quality of the cue-tip, and many players are wont to ascribe their defeat or bad play to the tip itself. Much depends on the manner of tipping the cue. Cue-tips are made in France and are of comparatively recent origin. They consist of two qualities of leather united, the under leather being very hard and flat, while the upper or top leather is somewhat porous, spongy, and springy. Selecting a good leather and the tipping of billiard cues is an art in itself, and has become so important an adjunct to the success of the business that the leading billiard halls in this country find it necessary to employ a man to exclusively attend to that branch of the trade. It is an art, for instance, to hammer a tip down to the requisite firmness before it is ready to be glued to the top of the cue, over which the tip generally projects (if a new one), on all sides. Inside of an hour's time in dry weather, if the quality of the glue is good, the tip may be finished off ready for use. Turn the cue bottom side up, firmly press the leather onto a table, then using a sharp knife, cut the leather even with the top of the cue itself, and pare the upper leather as one would an apple, finish with sandpaper, size about 1½, and smooth off with single O sandpaper. A cue-tip, when ready for playing, should be about half-moon shape, but many and various are the shapes of tips. Never use sandpaper on a cue-tip after it has been played with for a while. If the tip becomes hard or greasy from frequent use of chalk, roll it lightly with a French file.

BILLINGS, *bĭl'lĭngz*, FRANK, American physician: b. Highland, Wis., 1854. He graduated M.D. at Chicago Medical College, 1881; was interne at Cook County Hospital, 1881–2; studied in Vienna, 1885–6; professor of medicine at Northwestern University Medical School, 1891–8; professor of medicine and dean of Rush Medical College since 1898.

BILLINGS, HAMMATT: architect: b. Mass.; d. 1874, Nov. 14. He made his home in Boston, and gained high repute by his work in decorative design and book illustration, besides general architecture. He made the design for the Pilgrims' monument at Plymouth, also for the case of the great organ in the Boston music-hall. Besides illustrations for books, he designed ornamental bookcovers with marked success. Among a number of pleasing drawings by him, one in sepia, the *Enchanted Monk*, was greatly admired.

BIL'LINGS, JOHN SHAW, M.D., LL.D.: librarian, surgeon: b. Switzerland co., Ind., 1839, Apr. 12. He grad-

uated 1857 at Miami Univ., and 1860 at the Ohio Med. Coll. He was appointed act. asst. surgeon U. S. A., 1861, Nov., was in charge of the milit. hospitals at Washington and West Philadelphia two years, had some field service, and then did general hospital duty until 1864, Dec., when he became connected with the surgeon-gen's. office in Washington. In 1876, Dec., he was appointed surgeon in the regular army, with the rank of major. B. is a member of leading scientific socs. in America and Europe, and was vice-pres. of the National Board of Health 1879–80. He was promoted lieutenant-colonel and deputy surgeon-general 1894, June 6, and was retired 1895, Oct. 1. He was Prof. of Hygiene in the Univ. of Pennsylvania in 1893–96; and in the last year became director of the New York Public Library (Astor, Lenox, and Tilden foundations). His publications include *National Medical Dictionary; Ventilation and Heating; Index Catalogue of the Library of the Surgeon-General's Office, United States Army* (16 vols.); etc.

BIL'LINGS, Josh: see Shaw, Henry Wheeler.

BIL'LINGS, William: musical composer: 1746, Oct. 7—1800, Sep. 26; b. Boston, Mass. Brought up to the trade of a tanner, he made good use of his intellectual powers, and was for a time a teacher. He was the pioneer in America among musical composers, and did much to afford a higher education in singing, introducing into his work passages which made a demand for a better standard of musical ability, especially in singing devotional music, than was then in vogue. During the revolutionary war, B. composed a number of patriotic pieces with words which were sung in the camps of the colonial army. Among these were, *Lamentation over Boston, Retrospect, Independence, Columbia,* all of which became well known and popular. B. published 1770, *The New England Psalm-Singer, or American Chorister, Containing a Number of Psalm-Tunes, Anthems, and Canons,* reproduced 1878 in condensed form, which became very popular. In 1779 he published a work entitled *Music in Miniature,* which, besides a number of old tunes, contained 31 new and original compositions. He published *The Psalm-Singer's Amusement,* a work which also found wide acceptance; *The Suffolk Harmony* (1786); *The Continental Harmony* (1794); and a large number of anthems and other devotional pieces. B.'s work, though far below the modern standard, gave the first positive advance to the church music of this country. He died in Boston.

BILLINGTON, *bĭl'ling-ton,* Elizabeth: 1769–1818, Aug. 25; b. London; dau. of a German musician named Weichsel: she was the most celebrated English female singer of her day. She early came forward as a performer on the piano and as a composer; and having married her music-master, Thomas B., appeared with brilliant success on the opera stage in Dublin, 1786. Returning to London, she was engaged at Covent Garden at the then

unheard-of-salary of £1,000 for the season. She perfected her musical education under Sacchini in Paris, who wrote for her his opera, *Inez de Castro*, while she was singing in Naples, 1794. She appeared subsequently in Venice and Rome with the greatest applause. In 1799, her first husband being dead, not without suspicion of poison, she married a young Frenchman, M. Felissent, but returned to London, 1801, where she received £3,150 for six months, playing alternately at Covent Garden and Drury Lane. She retired from the stage, 1811, and died seven years later at her villa, near Venice. Her character as a wife was the reverse of exemplary; but as a singer she was unrivalled. To a voice of the largest compass and richest tone, trained in all the art of the Italian school, she added a fascinating personal beauty and grace. In illustration of her spirit, it is told that Catherine II. proposing, through her London ambassador, to engage Mrs. B. for the theatre of St. Petersburg, the vocalist demanded a sum that seemed exorbitant to the ambassador, who said, 'The Empress of all the Russias does not give more to her ministers'. 'Then let her make her ministers sing,' was the reply.

BILL IN PARLIAMENT: in the United Kingdom, a proposed law or act: see PARLIAMENT.

BILLION, n. *bĭl'yŭn* [F. *billion*—from L. *bis*, twice; and *million*]: in *Eng. notation*, a million of millions or 1,000,000,000,000; in *F. notation* (also in the *United States notation*), a thousand millions or 1,000,000,000.

BILLITON, *bĭl'li-ton':* island in the Dutch East Indies, between the s.e. of Banca and the s.w. of Borneo. It is separated from the former by Clement's Strait, and from the latter by the Caremata or B. Passage. Its n.w. point is in lat. 3° 13′ s., long. 108° 7′ e. Area 1,863 sq. m. It is rich in tin, iron, and timber, and exports trepang, edible birds' nests, sea-weed, tortoise-shell, and wax. Its coasts are beset with rocks and islets. Pop. (1882) 32,210; (1890) 38,779; (1900) 43,386.

BILLOW, n. *bĭl'lō* [Dan. *bölge;* Sw. *bolja;* Dut. *bolghe*, a wave of the sea: comp. Gael. *bolgach*, swollen—from *bolg*, a belly]: a very large wave or surge of the sea: V. to swell or rise into large waves; to surge. BIL'LOWING, imp. BIL'LOWED, pp. *-lōd.* BIL'LOWY, a. *-lō-ĭ*, full of billows; swelling into great waves.

BILL-STAMP: in Great Britain a stamp on a bill of exchange in value proportioned to the amount of the bill.

BILOBED, a. *bī'lōbd* [L. *bis*, twice; Eng. *lobe*]: divided into two lobes.

BILOXI, *bĭl-oks'ĭ*, a city in Harrison co., Miss., on Biloxi Bay and the Louisville and Nashville railroad; 80 miles n.e. of New Orleans. It is chiefly engaged in the canning of vegetables, fruit, fish, and oysters, but also has considerable shipping and manufacturing interests. In 1699 the first settlement by white men on the

Mississippi was made here under Pierre Le Moyne d'Iberville. Pop. (1910) 7,988.

BILSTON, *bils'ton:* town in s. Staffordshire, on rising-ground about 3 m. s.e. of Wolverhampton. It forms a part of the parliamentary borough of Wolverhampton. It has extensive iron and coal mines, iron smelting works, iron-foundries for making machinery, besides works for manufacturing tin-plate goods, japanned and enameled wares, nails, wire, screws, and coarse pottery. It is also the centre of the hardware trade. Fine sand, adapted for metal-casting, is found here. Pop. 24,000.

BIMACULATE, *bī-măk'ū-lāt:* having two spots.

BIMAH, *bē'mâ:* river of India, a branch of the Kistnah (q.v.), rises in the table-land of the dist. of Poona, in the presidency of Bombay, 3,090 ft. above the level of the sea, and flowing s.e., falls into the Kistnah, in n. lat. 16° 24′, e. long. 77° 20′, after a course of more than 500 miles.

BIMANOUS, a. *bī-mā'nŭs* [L. *bis,* twice; *manus,* the hand]: having two hands; two-handed. BIMA'NA, n. plu. *-mā'nă,* in some zoological systems, the first order of *Mammalia* (q.v.), an order containing the human species alone—the apes and monkeys being *quadrumanous* or four-handed: see MAN. Others reject this order altogether, protesting against this classification of man with brutes, and maintaining that the distance between him and them is too great to be represented as that between two orders in one class, or even between two classes of a zoological system. However, in assigning a place in this manner to man among animals, naturalists of course consider exclusively or chiefly his animal nature and bodily frame. The name B. has reference to the hands (q.v.) which terminate his anterior limbs; monkeys and lemurs, having opposable thumbs in all the four extremities, may be regarded as having four hands, although much less perfect than the human (see QUADRUMANA); but none of the inferior animals are *two-handed,* as man is.

BIMARGINATE, *bī-mâr'jĭn-āt:* double bordered.

BIMEDIAL, a. *bī-mē'dĭ-al* [L. *bi,* two; *medius,* middle]: in *geom.,* made up of the sum of two medial lines.

BIMEMBRAL, a. *bī-mĕm'bral* [L. *bis,* twice; *membra,* members]: having two members. (Said chiefly of sentences.)

BIMENSAL, a. *bi-mĕn'săl* [L. *bis,* twice; *mensis,* a month]: occurring once in two months.

BIMETALISM: the use of a double metallic standard in currency with a fixed relative value for each of the two metals (gold and silver).

Bimetalism does not rest upon any particular ratio; the coinage ratio is fixed by law, and can be changed by law. The ratio simply states the proportion existing between the silver dollar and the gold dollar when measured by weight. The ratio of 16 to 1 is the one advocated by American bimetalists, first because it was the ratio ex-

isting when the crusade against silver began; second, because it is the ratio now existing between the silver and gold coins in circulation in the United States; and, third, because an increase in the ratio, made by increasing the size of the silver dollar, would to the extent that it was joined in by other nations require the recoinage of silver coins into larger coins, and thus reduce the world's volume of standard money.

The arguments in defense of the bimetallic system begin with the self evident truth that stability in purchasing power is the test of virtue or honesty in money—that dollar being the best dollar which changes least from year to year in its command over all articles of merchandise. Stability would not be so important if all transactions were on a cash basis, but with the increase in credits, especially long-time credits, it is a matter of vital importance to have the purchasing power of the dollar fluctuate as little as possible. Jacobs, in his work on the precious metals, shows that an increase of 2 per cent. a year in the purchasing power of the dollar would amount to an increase of 500 per cent. in 100 years. It will be seen, therefore, that the burden of national debts and other long-time securities may be materially increased or decreased by a change in the purchasing power of the dollar.

That the value or purchasing power of the dollar depends upon the number of dollars has been declared to be, and correctly so, the most fundamental principle in the science of money. To illustrate: if the business of the world is adjusted to a certain volume of money, and that volume of money is afterward suddenly doubled, prices will necessarily rise, because there will be more money with which to purchase other things. If, on the other hand, the volume of money is suddenly reduced one-half prices will fall because of the scarcity of money. Next to absolute stability in the purchasing power of the dollar or unit, the most desirable thing is that any necessary change in the purchasing power of the dollar shall be gradual rather than sudden, and a sudden change in the value of the dollar can only be prevented by the prevention of a sudden change in the volume of money.

Bimetalism is theoretically better than monometalism (either of gold or silver), because under the double or bimetallic standard the volume of money changes less rapidly and less suddenly than under the single standard. Thus far history has shown no instance of a large simultaneous increase in the production of both gold and silver. There was an enormous increase in the production of silver during the 16th century; then there was a great increase in the production of gold during the year 1849 and the years immediately following. Early in the 'seventies there was another increase in the production of silver and we are just now enjoying a considerable increase in the production of gold. In each instance the increase in the production of one metal has spread itself over the

entire volume of money, and has, therefore, caused a less proportionate increase than it would have caused had the world been using but one metal, either gold or silver, as standard money.

The practical argument in favor of bimetalism is that neither metal alone furnishes a sufficient amount of money to support the world's commerce. The advocates of bimetalism not only contend that the law of supply and demand regulates the value of the dollar—an increase in the demand, the supply remaining the same, raising the purchasing power of the dollar, and an increase in the supply, the demand remaining the same, decreasing the purchasing power of the dollar—but they also believe that supply and demand regulate the market price of the metals. The contention of monometalists that it is impossible to fix a relation between two metals is met with the reply that the relation between two things of limited production, such as gold and silver, can be fixed by any nation or group of nations which can furnish a use for so much of both metals as is available for coinage.

The demand created by the government must be considered as added to the demand created by the arts. If the demand created by the government is sufficient to utilize the surplus over and above what the arts require, the commercial value can be kept up to the coinage value for the reason that each owner will seek the highest possible price, and so long as the government stands ready to convert a given amount of metal into a given amount of money, he will not have to dispose of the metal to any one else for less than the government price. If the government, instead of standing ready to convert one metal into money, stands ready to convert two metals into money, it can make the commercial ratio and the coinage ratio identical, if there is a use for the money. The changes in relative production would not effect this condition so long as the government was able to utilize all of the surplus of both metals.

Independent bimetalists and international bimetalists agree as to the theoretical and practical benefits of the double standard, but differ as to the ability of the United States to maintain the parity alone, the former believing and the latter denying, that under conditions as they now exist our nation is able to utilize all the silver that could come to our mints.

Germany introduced a single gold standard by the statutes of 1871, Dec. 4, and 1873, July 9. England has had it since 1816. In both countries, token coins of other metals are legal tender for small amounts only. In the Latin Monetary Union, consisting of France, Italy, Belgium, and Switzerland, this composite has actually prevailed since 1874, and the treaty of 1885 stipulates that the same shall continue at least five years after 1886, Jan. 1. Gold is the principal standard also in Portugal, Denmark, Norway, Sweden, and Holland. The United States established a double standard in 1792. The act of 1834

changed the legal ratio from 1:15 to 1:16; and the weight of gold coin was diminished proportionally, and the standard of coinage thus debased. We had actually a gold currency 1853 to 1861, Dec. 31, when specie payments were suspended. The law of 1873 practically demonetized silver. The law of 1878 restored its legal tender character.

The price of silver 1873–93 fluctuated greatly. Notwithstanding the purchases under the Bland-Allison act of 1878 and the 'Sherman' act of 1890 (the latter compelling the purchase of 54,000,000 ounces per year), the price declined to a point unprecedentedly low. This affected European trade with silver-using countries of the East, and confronted the United States with the problem of maintaining its silver at par. On the initiative of the United States a conference met at Brussels 1892, but failed of any practical results. The question was again agitated in the U. S. 1896 by the democratic party, which adopted a silver platform, with William Jennings Bryan as nominee for President. He, however, was defeated by William McKinley (q. v.), the republican candidate, who supported the gold standard, though he pledged himself to promote action by international agreement. In 1900 the democratic party and the republican party both adhered to their former positions; but other questions overshadowed the money question in this campaign, and for this reason, in spite of the increased majority for the republicans, the bimetalists claim that the question of the money standard is not yet settled.

BIMONTHLY, a. *bī-mŭnth'lĭ* [L. *bis*, twice, and *month*]: strictly every two months, or during two months; but used now to signify 'twice a month': see BIENNIAL.

BIN, or BINN, n. *bĭn* [AS. *bin*, a manger, a hutch: Ger. *beene*, a sort of basket: Sw. *binge*, a heap—*lit.*, a heap]: a large wooden box or chest with a lid, used for corn or flour etc.; a compartment in a wine-cellar.

BIN [L. *bini*, two by two]: a prefix meaning double; by twos; of two; another form of *bis*, twice.

BINARY, a. *bī'nėr-ĭ* [F. *binaire*, binary—from mid. L. *binārĭŭs*, consisting of two things—from L. *bīni*, two by two]: consisting of two, or two parts; dual; in *astron.*, applied to double stars; in *chem.*, applied to compounds consisting of two elements: N. constitution of two. BINATE, a. *bī'nāt*, growing in pairs; double.

BINARY COMPOUND: see BINARY THEORY.

BINARY THEORY, *bī'nėr-ĭ*, in Chemistry: a theory taking cognizance of the mode of construction of salts. It assumes that all salts contain merely two substances, which either are both simple, or of which one is simple, and the other a compound acting as a simple body. The best and most familiar illustration of the binary theory is common salt or chloride of sodium (NaCl), which is composed of the metal sodium (Na) and the non-metal chlorine (Cl), and is at a glance seen to be a *binary compound* (a compound of

two). In like manner, fluor-spar, or the fluoride of calcium (CaF), consists of the metal calcium (Ca) and the non-metal fluorine (F); iodide of potassium (KI), largely employed in photography, of potassium (K) and iodine (I); and bromide of silver (AgBr), also useful in photography, of silver (Ag) and bromine (Br). Considerable difficulty is experienced in including all salts under the binary theory, but in many cases the apparent difficulty may be (and has been) surmounted. But though the B. T. attracted much attention 1837–55, and was adopted by Liebig and many other chemists, it never met general acceptance, and has now been quite superseded. See ACIDS: SALTS: CHEMISTRY.

BINAURAL, a. *bĭn-aw'răl* [L. *bīnus*, double; *auris*, the ear]: having a double ear-piece: N. a stethoscope having a double ear-piece.

BIND, v. *bīnd* [AS. and Goth. *bindan*, to bind or tie: Icel. *binda*, to bind or knot (see BUNCH)]: to tie together; to fasten; to confine or restrain; to oblige by a promise, an oath, or an agreement; to form or sew on a border; to render costive or hard. BINDING, imp.: N. the cover of a book, etc.: ADJ. obligatory. BOUND, pt. and pp. *bownd*. BIND'ER, n. a person or thing that binds; the braid, band, or cord that confines the edges of a piece of cloth; a bandage. BINDERY, n. *bīnd'ĕr-ĭ*, a binder's workshop. To BIND TO, to attach to by service or obligation. To BIND OVER, to secure under a penalty that an appearance shall be made, or that an obligation be observed, as 'to bind over to keep the peace.'—SYN. of 'bind': to tie; oblige; compel; constrain; coerce.

BIND, n. *bīnd*, or BINE, n. *bīn* [Ger. *bund*, a bunch, a truss]: a miner's term for tough, argillaceous, or clayey shales.

BINDRABAN, *bĭn'dra-bân'*: town on the right bank of the Jumna, in the dist. of Muttra and lieut. governorship of the N. W. Provinces. It is in lat. 27° 34′n., long. 77° 45′ e.; 823 m. n.w. of Calcutta, and 92 s. of Delhi. The performance of religious rites appears to be the principal business of the place. Crowds of pilgrims come from all parts of India, particularly in honor of Krishna; and, through the munificence of wealthy devotees, sacred edifices are constantly becoming more numerous and costly. Here, as at Benares, the immediate margin of the river is occupied by flights of steps, or ghauts, as they are called. These extend for about a mile along the bank, being constructed of red stone from Jeypore, nearly 150 m. distant. Pop. 32,000, almost exclusively Hindu.

BIND'WEED: see CONVOLVULUS.

BINE, n. *bīn*, or BIND, n. *bīnd* [Icel. *binda*, to bind: Lith. *pinnu*, to wreathe, to plait: L. *vinĕă*, a vine]: the winding stem of a climbing plant,—thus, HOP-BINE, the shoots of hops. WOODBINE, the honeysuckle. BIND-WOOD, or BINWOOD, in *Scot.*, the ivy. BINDWEEDS, wild plants

with twining stems; convolvuluses; leafy plants of the genus *Convol'vulus*, ord. *Convol'vulăcĕæ*.

BINERVATE, a. *bī-nėr'vāt:* in *bot.*, two-nerved—applied to leaves which have two raised 'nerves' or 'veins.'

BINET, *bē-nā'*, Alfred, French psychologist: b. Nice, 1857, July 8. At first he studied law and medicine at Paris, but in 1880 took up the study of psychology, both experimental and pathological, and was later appointed director of the laboratory of physiological psychology at the Sorbonne, Paris. He has been one of the editors of *L'Année psychologique;* has contributed numerous articles to scientific and philosophical periodicals, including *Mind;* and has written *Animal Magnetism* (translated into English); *Studies in Experimental Psychology* (one part of which, on micro-organisms, was translated separately); and *Introduction to Experimental Psychology* (with Philippe and others).

BINET, Victor Jean Baptiste Barthelemy, French landscape painter: b. Rouen, 1849, March 17. He belongs to the realistic school, and made his debut in the Salon of 1878, showing *The Warren.* One of the most famous of his pictures is *The Plain at St. Aubin-sur-Quillebœuf* in the museum at Amiens. In 1889 he was awarded a first-class medal at the Paris Exposition.

BING, n. *bĭng* [Sw. *binge;* Icel. *bingr*, a heap: Icel. *bunga*, to swell: Scot. *bing*, a heap—perhaps connected with Bin 1]: a heap; a miner's term for a heap of ore or other mineral of a certain size.

BINGEN, *bing'ėn* (ancient *Vincum* or *Bingium*): town in the grand-duchy of Hesse-Darmstadt, Germany; in a charming country on the left bank of the Rhine, and on the right of the Nahe, here crossed by a bridge, generally supposed to have been built by the Romans and called the Bridge of Drusus. The people are busied chiefly in the manufacture of fustian, leather, flannel, and tobacco. The vine is extensively cultivated in the surrounding country. The celebrated Scharlachberger wine is produced in the vineyard of that name, near the village of Rüdesheim. In the vicinity of the town is the Rochusberg, with a chapel, to which annual pilgrimages are made. On the declivity of the hill are still the ruins of the old castle (blown up by the French, 1689), in which the emperor Henry IV. was detained a prisoner by his son in 1105. On the other side of the Nahe is the Rupertsberg, with the ruins of a monastery, in which St. Hildegarde resided in the 12th c. Below the town is the celebrated *Bingerloch*, formerly a very dangerous point in the navigation of the Rhine, on account of the sunk rocks which, with the exception of a narrow passage through which the waters rushed loud and furious, stretched across the river; but, 1834, these rocks were blown up. In the middle of the river stands the tower in which Bishop Hatto (q.v.) was said to have been devoured by rats. Pop. 10,000.

BINGHAM, *bĭng'ăm*, JOEL FOOTE, American clergyman: b. Andover, Conn., 1827, Oct. 11. He entered the Congregational ministry, but in 1871 exchanged it for that of the Episcopal Church. He was for 10 years lecturer on Italian literature in Trinity College, Hartford. He has written *Our Father's House* (1865); *Christian Marriage Ceremony* (1871); *The Twin Sisters of Martigny*, an Italian story (1899); *Francesca da Rimini*, from the Italian of Silvio Pellico (6 editions 1897–1904); *Christian Marriage* (1900); *Gemme della Letteratura*, in Italian (1903); *Sacred Hymns and Napoleonic Ode of Alexander Manzoni*, translated in rhyme (1904); etc.

BINGHAM, JOHN A.: lawyer and diplomat: 1815—1900, Mar. 20; b. Mercer, Penn. His early education was limited, and he was employed two years in a printing office, and though he studied at Franklin Coll., Ohio, he left without graduating. He gave some time to the study of law, was admitted to practice 1840, and was dist. atty. for Tuscarawas co., Ohio, 1845–49. In 1854 he was elected to congress as a republican, and held his seat till 1863. During this period he was placed in charge of the report on the contested Ill. elections, and was chairman of the managers in the impeachment of Judge Humphreys for high treason. Pres. Lincoln appointed him judge-advocate in the army and solicitor of the court of claims 1864, and he was special advocate in the trial of the assassins of Lincoln. He was U. S. minister to Japan 1873–85.

BINGHAMPTON, *bĭng'am-ton:* county seat of Broome co., N. Y.: pleasantly situated on both sides of the Susquehanna river at the mouth of the Chenango. Lofty hills confine the valleys of both rivers so that Indian paths, turnpikes, and railroads have each in turn been obliged to cross at this spot. B. has in consequence become a great railroad centre. The Chenango canal, connects it with Utica and the Erie canal. B. is on the Erie railroad, 215 m. n.w. of New York, 208 m. s.e. of Buffalo. Other railroads connect it with Syracuse, Albany, and Wilkesbarre (Pa.). This place, first settled by William Bingham of Philadelphia, 1787, and named after him, was incorporated as a town, 1818, and as a city, 1867. The abundant water-power afforded by both rivers gave manufacturing enterprise a great impulse, and when this was superseded by steam, B. again found decided advantages in its nearness to the Pennsylvania coal-fields. It is an important centre of the manufacture of cigars; other manufactures include chemicals, furniture, sheet-metal work, glass and refined oils. Its streets are wide and well-paved, and its rivers spanned by half a dozen bridges. Gas is supplied by a private corporation. The city has a number of parks, a state asylum for the insane, an orphans' home, a home for the indigent, Rom. Cath. parochial schools, numerous churches, national and state banks, and periodicals of all kinds. The property valuation exceeds $20,000,000. Pop. (1910) 48,443.

BINGLEY, *bĭng'lĭ*, Ward, Dutch actor: b. Rotterdam, of English parents, 1755; d. The Hague, 1818. In 1799 he made his debut on the stage of Amsterdam, and almost from the first took his place at the head of his profession, not only in the Dutch theatres, but also in those which performed French plays in Amsterdam and The Hague.

BINGLEY, *bing'lē:* town and township in the West Riding of Yorkshire, 15 m. w.n.w. of Leeds, on an eminence in a well-wooded district. It consists of one long street. The town contains the interesting church of All Saints (restored 1871) in the Perpendicular style, several other places of worship, an endowed grammar-school, and a mechanics' institute. It has worsted, cotton, and paper manufactures. Pop. 18,500.

BINGTANG, *bĭng-tâng'*, an island of the Rhio-Linga group, in the Malay archipelago. Mount Bingtang, its highest peak, 1,368 feet high, is in lat. 1° 4′ n., lon. 104° 28′ e.; Rhio, the Dutch free port, is in lat. 54′ 40″ n., long. 124° 26′ 30″ e. Area of the island, 403 square miles; pop. with Rhio, situated on Tanjong Pinang, an adjoining islet, about 20,000. The geological formation is granite, overlaid with cellular clay ironstone. Iron and tin are found, but not as yet extensively mined. The gambier plant (uncaria gambier), which produces terra japonica, is the chief product of the island. A large number of gambier plantations are cultivated by Chinese colonists, who cultivate black pepper at the same time; the refuse leaves of the gambier, after obtaining the coagulated decoction of commerce, being excellent manure for the latter plant. Other productions are cocoa-palm, durian-fruit, much prized by the natives, caoutchouc, gutta-percha, and damar. Many valuable timber trees are found on the island. The native Malays, who are rude hunters and fishermen, like the Orang Benua of the Malay peninsula, are now outnumbered by the enterprising Chinese.

BINION, *bĭn'yŏn*, Samuel A., American scholar and author: b. Balvirziski, province of Suwalki, Poland, 1842, May 1. He was educated at the universities of Breslau and Padua and in King's College, London; was a reader in the British Museum and a superintendent of schools in Seville and the Balearic Islands; and was for several years connected as a post-graduate with the Johns Hopkins Univ. in Baltimore, where he also catalogued the works on Oriental languages in the Peabody Museum. He has contributed to current encyclopedias, translated from the Polish Sienkiwicz' *Quo Vadis*, *With Fire and Sword*, and *Pan Michael*, and published *Ancient Egypt, or Mizraim.*

BINNACLE, or Binacle, n. *bĭn'ă-kl* [formerly written Bittacle, n. *bĭt'ă-kl*—from Port *bitacola*, F. *habitacle*, an abode—from L. *habĭtac'ŭlum*]: a wooden box or case for containing a ship's compass, with other apparatus (especially a lamp) essential to its use. In large ships, there

are generally two binnacles, one for the steersman, and one for the officer or seaman who 'cons' or superintends the steering. Sometimes a lamp is so placed as to illuminate two compasses at night, sometimes only one. Many improvements have recently been made in binnacles. See COMPASS, MARINER'S.

BINNEY, *bĭn'nĭ*, AMOS: naturalist: 1803, Oct. 18—1847, Feb. 18; b. Boston. He graduated at Brown Univ. 1821. His *Terrestrial Mollusks of the United States*, 3 vols. (1847–51), was the first great work on the subject. His tomb at Mount Auburn is notable for its beauty.—WILLIAM G., his son, pursued the same line of investigation, and works by him have been issued by the Smithsonian Institution.

BINNEY, HIBBERT, Canadian clergyman: b. Nova Scotia, 1819, Aug. 12; d. 1887. He graduated at Oxford Univ. in 1842. He became bishop (Anglican) of Nova Scotia and Prince Edward Island in 1851, this being the first instance of England founding a bishopric in her colonies. He attended the General Convention of the Protestant Episcopal Church held in Chicago in 1886.

BIN'NEY, HORACE: eminent jurist and mem. of congress: 1780, Jan. 4—1875, Aug. 12; b. Philadelphia. He is known by his reports of Penn. supreme-court decisions, his *Inquiry into the Formation of Washington's Farewell Address* (1858), and his defense of Pres. Lincoln's suspension of habeas corpus writs. He was a member of the 23d Congress; and a director in the United States Bank. He wrote many valuable papers and was the author of *The Leaders of the Old Bar of Philadelphia*, *The Privilege of the Writ of Habeas Corpus Under the Constitution*, and *Reports of Cases in the Supreme Court of Pennsylvania* (6 vols.).

BIN'NEY, THOMAS, D.D., LL.D.: 1798–1874; b. Newcastle, Eng.: one of the most distinguished modern preachers of the Congregationalists in England. After officiating as a clergyman in Newport, Isle of Wight, he removed to London, 1829, where he acquired extensive popularity. The hall in which he preached becoming too small for his congregation, Weigh-house Chapel, near London Bridge, was erected for him by his hearers, 1833. Here he continued with great success for 40 yrs. Among the most popular of his religious works are: *Conscientious Clerical Nonconformity*, *The Practical Power of Faith*, *Service of Song in the House of the Lord*, *Money*, and *Is it Possible to Make the Best of Both Worlds*. See *Memorial of B.*, edited by John Stoughton, D.D., 1875.

BINNIE, *bĭn'nĭ*, SIR ALEXANDER R., English civil engineer: b. London, 1839, March 26. He was educated at private schools. He worked on Welsh railways 1862-6, and for the Indian Public Works Department 1868–74; was engineer of the city of Bradford 1875-90; constructed the Nagpore waterworks, the Blackwall tunnel, the Bradford waterworks, the Barking Road Bridge, etc. In 1897 he was made chief engineer of the London County

Council. His publications include articles and reports on professional subjects, lectures on waterworks, papers on rainfall, etc.

BINNS, *bĭnz*, CHARLES FERGUS, Anglo-American ceramic expert: b. Worcester, England, 1857, Oct. 4. A son of the director of the Royal Porcelain Works in his native city, he was superintendent of various departments there, 1872–97. Leaving England in the last named year he was principal of the Technical School of Science and Art, Trenton, N. J., 1897–1900, and since June, 1900, has been director of the New York State School of Clay Working and Ceramics. He has written *Ceramic Technology* (1896); *The Story of the Potter* (1897).

BINOCLE, n. *bĭn'ōkl* or *bī'nō'kl* [L. *binus*, double; *oc'ŭlus*, an eye]: a telescope fitted with two tubes for both eyes. BINOCULAR, a. *bī-nŏk'ū-lėr*, having two eyes; employing both eyes at once—as *binocular vision*. BINOCULAR GLASSES, opera or field glasses made double for both eyes.

BINOMIAL, n. *bī-nō'mĭ-ăl* (L. *bis*, twice; *nōmen*, a name): in *alg.*, a quantity consisting of two terms connected by the sign plus (+), or minus (—): ADJ. pertaining to. BINOMIAL SYSTEM, in *bot.* or *zool.*, the system according to which every plant or animal receives two names, the one indicating the *genus* to which it belongs, the other being its own specific name—as *Exogōnĭum purga*, the jalap plant; *Canis familĭāris*, the domestic dog. BINOMIAL THEOREM, in *math.*, that remarkable series or analytical formula $(a+b)^n = a^n + na^{n-1}b + \frac{n(n-1)}{2}a^{n-2}b^2 + \ldots + \frac{n(n-1)\ldots(n-r+1)}{1.2.\ldots\ldots r}a^{n-r}b^r + \ldots + b^n$ by which any power of a B. can be expressed and developed. Thus, the 8th or any other power of $a+b$ can be at once written down without going through the actual multiplication of $a+b$ by itself for the given number of times. The older mathematicians were acquainted with this theorem in the case of integral exponents, though the actual discoverer is unknown. Newton was the first to generalize it for all exponents—fractional and negative, as well as integral. It is one of the finest of his discoveries, but the tradition that it is engraved on his tomb in Westminster Abbey appears to be erroneous. Among its many applications, it affords the means of finding any root of any number. The numerical coefficients to 1, n, $\frac{1}{2}n(n-1), \ldots$ in the binomial expansion (for integral n) are the figurative numbers of Pascal. (See FIGURATE NUMBERS.) Their sum is always equal to 2^n.

BINOT, n. *bē-nō* [F]: a kind of double mold-board plow.

BINOTONOUS, a. *bī-nŏt'ō-nŭs:* consisting of two notes, as the song of some birds.

BINOUS, a. *bī'nŭs* [L. *bīni*, two by two]: double; in a pair, as leaves; the same as BINATE.

BINOXALATE, n. *bĭn-ŏks'ăl-āt* [L. *bis*, twice; Gr.

oxălis, a kind of sorrel—from Gr. *oxus*, acid]: a combination of two equivalents of oxalic acid with one equivalent of a base. BINOX'IDE, n. *-ŏks'ĭd* [L. *bis*, twice, and *oxygen*]: the second degree of oxidation of a metal or other substance —better written *dioxide*.

BINTURONG, *bĭn'tu-rong* (*Ictides*): genus of quadrupeds nearly allied to Raccoons (q.v.), from which the chief distinction is in the smaller and less tuberculated back molar (grinder) teeth. Only two species are known, natives of Malacca, Java, Sumatra, etc.

BINYON, *bĭn'yŭn*, LAURENCE, English poet: b. Lancaster, 1869, Aug. 10. He has been an assistant in the British Museum from 1893. Besides editing the *Shilling Garland* (1895–8) he has published *Lyric Poems* (1894); *Poems* (1895); *London Visions* (1895–8); *The Praise of Life* (1896); *Porphyion and Other Poems* (1898); *Western Flanders* (1898); *Odes* (1900); *Catalogue of English Drawings in the British Museum* (1898–1902); *Dutch Etchers of the* 17th *Century; Lives of John Crome and John Sell Cotman; The Death of Adam* (1903); *Penthesilea* (1905); etc.

BIOBIO, *bē'o-bē'o:* largest river of Chili; it has a w.n.w. course from the Andes to Concepcion on the Pacific, being 2 m. wide at its mouth, and navigable for boats from the sea to the mountains. Its lower stream separates the province of Concepcion on the n. from independent Araucania on the s.

BIOGRAPH, also called the CINEMATOGRAPH, VITOSCOPE, etc.: an apparatus that displays a series of photographs in rapid succession, giving the appearance of objects in motion. A long celluloid film is unwound from a cylinder and passing in front of the lens of a camera is given rapid exposures. From these negatives positives on transparent films are printed, and exposed in a stereopticon in exactly the same manner as the pictures were taken, each picture stopping an instant to be thrown upon a screen. The stopping of the film is so rapid that the appearance of smooth continuous motion is produced. The exposures are taken at a rate of from 25 to 50 per second, and the rolls range in length from 50 to 200 feet, making from 800 to 3,000 separate pictures. The biograph differs from its predecessor, the kinetoscope, in that instead of showing small pictures through an enlarging lens it projects them upon a screen. They are used extensively in theatres to give reproductions of parades, athletic tournaments, prize fights, dances, etc.

BIOGRAPHY: department of literature which treats of the lives of individuals. The mode of treatment, especially in modern times, is far from uniform. In some cases, B. approaches the sphere of philosophy; in others, that of history; while in the majority it assumes, to a large extent, the character of analytic or descriptive criticism. To none of these modes, theoretically considered, can there be any valid objection; everything depends on the judiciousness of the biographer. The great points which he must keep

perpetually in view are the personality and characteristics of his subject. If these are buried under a load of digressive dissertations, his book, however valuable or interesting, ceases to be a B., except in name. Anciently, B. was more of a mere *curriculum vitæ* than it is now; the leading incidents of a man's life were narrated in their historical sequence, without any elaborate attempt to analyze the character from which they emanated. Like ancient history, it had a simple greatness, a stately dignity of narrative, colored here and there but sparingly with grave eulogy or censure. Modern B., on the other hand, like modern history, is full of elucidations, criticisms, and disquisition; and though wanting in the severe grace of its classic predecessor, it is much more lively, acute, and expansive.

Biographical literature appears to have existed from a very early period. The oldest historical books of the Jews abound with beautiful examples of it, such as the lives of the patriarchs and the story of Ruth. But what, indeed, are the mythologies of all ancient nations except a chaos of heroic or divine biographies written not on walls of stone or rolls of parchment, or leaves of papyrus, but on the tablets of the memory. Of purely biographical works, the most valuable that has come down to us from the Greeks is the *Parallel Lives* of Plutarch, a composition of the 2d. c. after Christ. Roman literature also possesses an admirable specimen in the *Life of Agricola* by his son-in-law, Tacitus. Besides these may be mentioned the *Life of Alexander the Great* (in Latin) by Curtius, and of *Apollonius of Tyana* (in Greek) by Philostratus, *Lives of the Sophists* (in Greek) by Philostratus, and a *Life of Plato* (in Greek) by Olympiodorus of Alexandria.

Of later date is St. Jerome's *Lives of the Fathers;* while biographies, more or less complete, of saints, martyrs, bishops, etc., are scattered profusely through primitive ecclesiastical literature. The monks of the middle ages also worked hard at the manufacture of absurd and superstitious legendary biographies. Modern biographical literature may be said to date from the 17th c., and has been developed to an extraordinary extent. Among biographical works, some are universal, as Michaud's *Biographie Universelle* (1811–28; new ed. 45 vols. 1842–66); Bayle's *Dictionnaire Historique et Critique* (1697); Chalmers's *Biographical Dictionary* (32 vols.); Vapereau's *Dictionnaire Universel des Contemporaires* (now ed. 1893). Others discuss the lives of certain classes of men, as Vasari's *Lives of the Painters* (Florence, 1550); the *Acta Sanctorum* (q.v.); Johnson's *Lives of the Poets* (1781); Grove's *Dictionary of Musicians* (1879); Some are for certain countries only: thus Fuller's *Worthies of England* (1662); *Biographia Britannica* (1747); Appleton's *Cyclopædia of Amer. Biography* (1886–88); Sparks's *American Biography* (1834); Leslie Stephen's *Dictionary of National Biography* (1885).

Individual biographies may be remarkable for their literary charm, for the character of their subject or the in-

teresting events of his life, or mainly for the fulness of the light they throw on his surroundings. Some biographies combine these excellencies in various degrees. Of English biographies, Boswell's *Johnson* and Carlyle's *John Sterling* are generally admitted to rank foremost. Other important works are Southey's *Nelson*, Moore's *Byron*, Lockhart's *Scott;* and more recently, Lewes's *Goethe*, Morley's *Diderot*, Trevelyan's *Macaulay*, Martin's *Life of the Prince Consort*, Froude's *Carlyle*. Elements of theological controversy are in Stanley's *Arnold*, Stopford Brooke's *Robertson* (of Brighton), as political argument is in Morley's *Cobden*. Carlyle's *Cromwell* and *Frederick* and Masson's *Milton*, are largely historical of the times of their subjects. America has Washington Irving's *Columbus*, Spark's *Washington*, Parton's *Franklin and his Times*, with others as nameworthy. In France there are famous biographies by Fontenelle, Burigny, Voltaire, Mallet, Boissy d'Anglas, Villemain, Cousin; and in Germany, by Herder, Garve, Heeren, Varnhagen von Ense, Döring, Pertz, Haym, Otto Jahn, Droysen, and many others.

Autobiographies have also become abundant in this self-conscious age; but many of them have perennial charm and value. Gibbon's is one of the more notable English autobiographies; others are those of Hume and Cobbett. Of American works of the kind, probably Franklin's is the foremost. In England, more or less complete autobiographical books are those of Harriet Martineau and of John Stuart Mill, Col. Meadows Taylor's *Story of My Life*, and Carlyle's *Reminiscences*. Goethe's *Dichtung und Wahrheit*, possibly the most delightful work that can be referred to this class, is unique; but its defect as an autobiography is, that it remains impossible to tell how much is *truth* and how much *poetry*, to use the author's own antitheses.

BIOLOGY, n. *bī-ŏl′ŏ-jĭ* [Gr. *bīos*, life; *logos*, a discourse]: the science which investigates the phenomena of life; whether vegetable or animal. The science of life embraces knowledge regarding the phenomena of organized beings as distinguished from the inorganic world. It may be divided into four main divisions: 1. Morphology (including Anatomy and Histology); 2. Distribution, geographical and geological; 3. Physiology, animal and vegetable; 4. Ætiology, or the discussion of the problems as to the causes and origin of life. Thus a large proportion of the several articles in this work on Zoology, Botany, Physiology of vegetables, animals, and the human subject, including such articles as Animal and Animal Kingdom, Animal Heat, Reproduction, Vegetable Physiology, belong to the wide subject of B., which also borders on the provinces of Psychology and Sociology. By B. is sometimes meant Physiology merely. See DARWINIAN THEORY. BIOLOGIC, a. *bī′ō-lŏj′ĭk*, or BI′OLOG′ICAL, a. *-ō-lŏj′ĭ-kăl*, relating to the science of life. BIOL′OGIST, n. *-ŏl′ō-jĭst*, one who treats of the phenomena life.

BIOLYTIC, a. *bī′ō-ly-tĭk* [Gr. *bios*, life; *luein*, to destroy]: destructive of life.

BIOPHAGOUS, a. *bī-ŏf′ă-gŭs* [Gr. *bīos*, life; *phāgo*, I eat]: applied to plants that consume living organisms, as the insectivorous Venus's fly-trap.

BIOPLASM, n. *bī′ō-plăzm* [Gr. *bīos*, life; *plasma*, what has been formed]: living formative matter as distinguished from matter formed; the material through which every form of life manifests itself; called also PROTOPLASM (q.v.).

BIOT, *bē-ō*, JEAN BAPTISTE: 1774, Apr. 21—1862, Feb. 3; b. Paris; French physicist and astronomer. He entered the artillery, but forsook the service for science; and in 1800 became prof. of physics in the Collége de France. He was made a member of the Institute, 1803. With Arago he was (1806) sent to Spain to carry out the measuring of a degree of the meridian. In 1815, the Royal Soc. of London elected him one of their 50 foreign members. In 1817, he visited England, and went as far north as the Shetland Islands, in order to make observations along the line of the English arc of meridian. His most valuable contributions to science are on the polarization of light; and his researches connected with ancient astronomy are also very valuable. Of his numerous writings may be mentioned *Traité Élémentaire d'Astronomie Physique*, 3 vols. (Paris, 1805); 3d ed., considerably augmented (1850), 6 vols., with vol. of plates—translated into English. *Traité de Physique*, 4 vols. (1816); *Précis de Physique*, an abridgment of the former in 2 vols. (1817), often republished; *Recueil d'Observations Géodésiques*, etc. (1821). B. contributed many excellent biographies of scientific men to the *Biographie Universelle*. Among the most important of his later works are *Recherches sur l'ancienne Astronomie Chinoise* (1840); *Mémoire sur la Constitution de l'Atmosphere Terrestre*, in the *Connaissance des Temps* (1841); and *Etudes sur l'Astronomie Indienne* (1862). In 1849, B. was made a commander of the Legion of Honor, and he was also a member of most of the learned societies in Europe.

BIOTITE, n. *bī′ō-tīt* [after *Bion*, a F. naturalist]: a variety of mica containing iron and magnesia.

BIPAROUS, a. *bĭp′ăr-ŭs* [L. *bis*, twice; *parĭŏ*, I bring forth]: having two at a birth; in *bot.*, applied to a cyme in which the main axis ends by giving off two new ones, and these again two, thus forming a dichotomous inflorescence. BIP′ARTITE, a. *-tīt* [L. *bipartītus*, divided into two parts—from *bis*, twice; *partītus*, divided]: divided into two parts, as a leaf; having two corresponding parts. BIP′ARTI′TION, n. *-tĭsh′ŭn*, the act of dividing or making into two corresponding parts. BIP′ARTILE, a. *-tĭl*, that may be divided into two parts.

BIPECTINATE, a. *bī-pĕk′tĭn-āt* [L. *bī*, two; *pecten*, comb]: in *bot.*, having two margins, each toothed like a comb.

BIPED, n. *bī′pĕd* [L. *bĭpĕdem*, two-footed—from *bis*,

twice; *pedem*, a foot]: an animal having two feet. BIPEDAL, a. *bĭp'ĕ-dăl* or *bī-pē'dăl*, having two feet. The term Biped is sometimes applied, as descriptive, to man, more frequently to birds, and scarcely admits of application to any other animal except a very few species of reptiles, some of which are batrachian (see BATRACHIA and SIREN), and some saurian (see SAURIA). The two-footed saurians may be regarded as a link between that order and serpents, the two-footed batrachians as connecting batrachians with fishes, other characters of resemblance being in both instances associated with this.

BIPELTATE, a. *bī-pĕl'tāt* [L. *bis*, *pelta*, shield]: in *zool.*, having a covering like two small shields, or like a double shield.

BIPETALOUS, a. *bī-pĕt'ă-lŭs* [L. *bis*, twice; Gr. *pet'alon*, a leaf]: having two flower-leaves or petals.

BIPINNATE, a. *bī-pĭn'nāt* [L. *bis*, twice; *pinna* or *penna*, a feather]: in *bot.*, applied to a leaf divided and subdivided pinnately; having leaflets in pairs.

BIPINNATIFID, a. *bī'pĭn-năt'ĭ-fĭd* [L. *bis*, twice; *pinna*, a feather; *findo*, I cleave; *fĭdī*, I cleft]: in *bot.*, having pinnatifid leaves, the segments of which are themselves pinnatifid.

BIPINNATIPARTITE, a. *bī'pĭn-năt-ĭ-pâr'tīt* [L. *bis*, twice; *pinna*, a feather; *partītus*, divided]: differing from bipinnatifid in having the divisions of a pinnatifid leaf extending to near the midrib.

BIPLICATE, a. *bī'plī-kāt* [L. *bis*, twice; *plĭco*, I fold]: in *bot.*, doubly folded in a transverse manner, as in the section of some cotyledons or seed-lobes.

BIPOLAR, a. *bī-pō'lĕr* [*bi*, and *polar*]: in *anat.*, having two attached processes, as some nerve-cells.

BIPONT, a. *bī'pont*, or BIPONTINE, *bī-pont'ĭn* [L. *bipontinus*, now Zweibrücken in the Bavarian Palautinate] relating to books published in Zweibrücken L. *Bipontium*).

BIPOROSE, a. *bī-pō'rōs* [L. *bis*, twice; L. *porus;* Gr. *poros*, a pore]: in *bot.*, having two rounded openings.

BIPUNCTATE, a. *bī-punk'tāt* [L. *bis; punctatus*]: having two punctures.

BIPUPILLATE, a. *bī-pū'-pĭl-lāt*]: in *entom.*, having two pupil-like markings, differing in color in the ocellus of a butterfly's wings.

BIQUADRATE, n. *bī-kwŏd'rāt* [L. *bis*, twice; *quadrātus*, squared]: the fourth power of a number, or the square of the square. BI'QUADRATIC, a. *-răt'ĭk*, relating to the fourth power: N. an equation involving the fourth power. See EQUATIONS.

BIQUINTILE, n. *bī-quin'tĭl* [L. *bis; quintilis*, the fifth month of the Roman year, afterward July]: an aspect of the planets, first noted by Kepler, when their distance from each other is $\frac{2}{5}$ of a circle, or 144 degrees.

BIRAMOUS, a. *bī-rā′mŭs* [L. *bis*, twice; *rāmus*, a branch] having a limb divided into two branches.

BIRCH, n. *bèrch* [AS. *birce;* Sw. *björk;* Dan. *birk;* Ger. *birke*, a kind of birch]: name of a tree; a bundle of twigs used as a rod of correction; the *Betida alba*, and *B. glutinōsa* ord. *Betulācĕæ*. BIRCH or BIRCH′EN, a *-ĕn*, made of birch.

BIRCH (*Be′tula*): genus of plants of the nat. ord. *Amentaceæ* (q.v.), sub-order *Betulineæ*, the nat. ord. *Betulaceæ* of some botanists. In this order, or sub-order—which contains only the two genera, Birch and Alder (q.v.)—the flowers have merely small scales for their perianth; the ovary is two-celled, but the fruit—a small achene (q.v.)—is by abortion one-celled; the fruits and scales united form a sort of cone; and the leaves have stipules which soon fall off. They all are trees or shrubs, natives of temperate and cold regions.—The genus *Betula* is distinguished by 10–12 stamens, and winged achenia.—The COMMON B. (*Betula alba*) has small ovato-triangular doubly serrated leaves. It is a very beautiful forest-tree, abounding in the n. of Europe and of Asia, often forming large groves by itself. In the s. of Europe, it is found only on mountains of considerable elevation. It is a tree of rapid growth. In favorable situations, it attains the height of 60 or even 70 ft., with a diameter of 1½ or 2 ft.; while on the n., or utmost alpine limits of vegetation, it appears as only a stunted bush. The bark is smooth and silvery white, and its outermost layers are thrown off as the tree advances in age. The smaller branches are very slender and flexible, and in a particularly graceful variety called the WEEPING B. (*B. pendula* of some botanists), they are still more slender, elongated, and pendulous. The bark and leaves of the B. are, in some northern countries, used medicinally in cases of fever and eruptions. They are used also for dyeing yellow. The bark is sometimes employed in tanning, and is preferred to every other kind of bark for steeping nets, sails, and cordage. See BARK FOR TANNING. It is in come countries made into shoes, hats, drinking-cups, etc., and it is even twisted into a coarse kind of ropes. Portable boats made of it are used on the Volga. It is remarkable for durability. In many parts of the north of Europe, it is used instead of slates or shingles by the peasantry; and in Russia—the outer or white layers being subjected to distillation—there is obtained a reddish empyreumatic oil called B. OIL; it yields also the B. TAR, or *Degutt*, which is employed in the preparation of Russia leather. Dried, ground, and mixed with meal, B. bark is used in Norway for feeding swine; and, in times of scarcity, has even served for human food. The wood is in universal use in northern countries for various purposes. It is white, firm, and tough.—The WHITE B. of N. America (*B. populifolia*) is a variety of the foreign *B. alba*, but is of not much value. It is found as far south as Pennsylvania. The wood is scarcely

used.—The Black B. of the same country (*B. nigra*), sometimes called Red B., and very similar to the common B., produces very hard and valuable timber. It attains the height of 70 ft. It is not found further n. than Mass. The bark is greenish-brown, twigs reddish, the wood light-colored.—The Cherry B., Sweet or Black B. (*B. lenta*), has dark-brown bark, sweet and aromatic, the twigs reddish-bronze, and the fine-grained timber reddish, used for cabinet-work; it is common in the n. United States and s. on mountains. The Yellow or Gray B. (*B. lutea*) has the bark of the trunk yellowish or silvery-gray; tree not larger than *B. lenta;* in moist woods from N. England to Lake Superior and n. Two shrub B. occur: the Low B. (*B. pumila*), 2–8 ft., N. J. and n.; and the Dwarf B. (*B. glandulosa*). 1–4 ft., branches with wart-like dots, Alpine and n. The *B. excelsa* does not exist; *B. lutea*, the plant intended, was confused by the originator, Aiton, and by Regel, with *B. papyracea* or *B. nigra*. Saplings of Amer. species are much employed for making hoops for casks.—The Paper B. (*B. papyraceæ*) is found in the n. parts of North America. It attains the height of 70 ft. The bark of the young trees is of a brilliant whiteness. The bark is capable of division into very thin sheets, which have been used as a substitute for paper. It is used by the Indians for canoes, boxes, buckets, baskets, etc. Large plates of it are curiously stitched together with the fibrous roots of the White Spruce, and coated with the resin of the Balm of Gilead Fir. The wood is used for the same purposes with that of the common B.—The mountainous districts of India produce several species of this genus. Thin, delicate plates of the bark of *B. Bhojputtra*, a native of the mountains of Kumaon, are used for lining the tubes of hookahs, and are carried in great quantities to the plains of India for this purpose. They were formerly used instead of paper for writing. *B. acuminata*, a native of the mountains of Nepaul, is a tree of 50–60 ft. high, covered with branches from the base, and of an oval form. Its wood is strong and durable. —The Dwarf B. (*B. nana*) is a mere bushy shrub, seldom more than two or three ft. high, generally much less. It has orbicular crenate leaves. It is a native of the whole of the most northern regions of the globe, and is found in some parts of the Highlands of Scotland. Its seeds are the food of the ptarmigan, on which the Laplanders in a considerable degree depend. A similar shrubby species (*B. antarctica*) occurs in Terra del Fuego.

BIRCH, *bĕrch* Samuel: 1813, Nov. 3—1885; b. London; son of the Rev. S. Birch, rector of St. Mary Woolnoth, London. B. was educated at Merchant Taylors' School. In 1834, he entered the public service under the commissioners of public records; and in 1836, obtained the appointment of assistant in the dept. of antiquities, British Museum In this capacity, B. acquired an extensive acquaintance with archæology in all its branches. He studied not only Greek and Roman antiquities, including

numismatics, but applied himself with untiring zeal to Egyptian hieroglyphics. His success in this department gained the notice of the celebrated Chevalier Bunsen, who gladly availed himself of B.'s knowledge in the philological portion of *Egypt's Place in Universal History.* After Bunsen's decease, B. was engaged to prepare for the press and edit the fifth and concluding volume of *Egypt's Place,* which he did admirably, bringing the results of discoveries from 1848 down to 1867. At the same time B. also prepared a second edition of the first vol., including the most recent investigations. In 1844, he was appointed assistant keeper in the dept. of antiquities, and in 1861, keeper of antiquities. In 1862, B. received the honorary degree of LL.D. from the Univ. of St. Andrews, and from Cambridge in 1874, in which year he was president of the great London congress of Orientalists. B.'s principal publications are as follows: *Gallery of Antiquities selected from the British Museum by F. Arundale and J. Bonomi, with Descriptions by S. Birch* (1842); *Views on the Nile, from Cairo to the Second Cataract, drawn on Stone, from Sketches taken by Owen Jones and J. Goury, with Historical Notices of the Monuments by S. Birch* (1843); *Catalogue of Greek and Etruscan Vases in the British Museum* (1851), drawn up in conjunction with Mr. Newton; *An Introduction to the Study of the Egyptian Hieroglyphs,* for Gardner Wilkinson's *Egyptians* (1857), and a new edition of Wilkinson's work (1879); *History of Ancient Pottery* (2 vols. 1858); *Description of the Papyrus of Nas-khem, Priest of Amen-ra, discovered in an Excavation made by direction of H. R. H. the Prince of Wales in a Tomb near Gournah at Thebes* (1863); and *Egyptian Texts* (1877). Besides his Egyptian and classical labors, B. also studied Chinese, and in that direction was author of the following brief contributions, viz.: *Analecta Sinensia,* short stories from the Chinese (1841); *The Friends till Death,* a tale translated from the Chinese (1845); and *Chinese Romance—The Elfin Foxes* (1863). B. likewise contributed papers to the *Archæologia,* to the *Transactions of the Royal Society of Literature,* the *Revue Archéologique,* the *Archäelogische Zeitung,* and the *Zeitschrift für Aegyptische Sprache und Alterthumskunde.* He also wrote many articles for the *English Encyclopedia,* principally on Egyptian antiquities and hieroglyphics. In the same class of subjects, he was a contributor to Chamber's *Encyclopedia.*

BIRCH, THOMAS, D.D.: 1705, Nov. 23—1766, Jan. 9: b. Clerkenwell. Having taken priest's orders, 1731, he was presented, 1732, to a living in Essex, and in 1734 became chaplain to the Earl of Kilmarnock, who was beheaded, 1746. Appointed in the latter year rector of St. Margaret Pattens with St. Gabriel, Fenchurch street, London, B. was elected in 1752 one of the secretaries of the Royal Soc., a history of which he published in 4 vols., 4to, 1756–7. In 1761, he was preferred to the rectory of Deepdene, Surrey. His first literary undertaking, in which he was assisted by others, was *The General Dic-*

tionary, Historical and Critical, 10 vols., 1734–41, founded on Bayle's celebrated work. He next edited the collection of state-papers of Thurloe, secretary to Oliver Cromwell, 7 vols., folio, 1742. His other works are: *Life of the Hon. Robert Boyle* (1744); *Lives and Characters of the Illustrious Persons of Great Britain,* the engravings by Houbraken, Gravelot, and Vertue (London, 1743–52); *Inquiry into the Share which King Charles I. had in the Transactions of the Earl of Glamorgan* (1747); *Historical View of the Negotiations between the Courts of England, France, and Brussels,* 1592 to 1617 (1749); *Life of Tillotson* (1752); *Memoirs of the Reign of Queen Elizabeth* (2 vols., 1754); *Life of Henry Prince of Wales* (1760); etc. He edited the works of Sir Walter Raleigh, Bacon's works, and various others. He was killed by a fall from his horse in the Hampstead Road. He left an extensive MS. collection, with his library, to the British Museum, of which he was a trustee. From these MSS. were compiled *The Courts and Times of James I. and Charles I.,* 4 vols. 8vo. (London, 1848).

BIRCHARD, *bėrch'ărd* ISAAC JAMES, Canadian educator: b. Uxbridge, Ont., 1850, Oct. 11. He was principal of a public school in Toronto, 1874–80; master of mathematics at Brantford College Institute in 1882–93; and in 1900 was master of mathematics in the Toronto College Institute. He is best known as the author of the textbook, *Plane Trigonometry for Schools and Colleges* and as the joint author of *High School Algebra.*

BIRCHENOUGH, *bėrch'e-nō,* MABEL (BRADLEY), English novelist, third daughter of the late H. G. Bradley, dean of Westminister, and wife of Henry Birchenough, a writer on statistics. She has written: *Disturbing Elements*; *Potsherds*; *Private Bobs.*

BIRD, n. *bėrd* [AS. *brid,* the young of birds—from *brédan,* to breed: Ger. *brut,* a brood of young]: a feathered animal; a chicken; a young fowl; V. to catch birds. BIRD-BOLT, a small arrow. Stevens, in his note on *Much Ado about Nothing,* says the B. is 'a short thick arrow, without point, spreading at the extremity so much as to leave a broad flat surface, about the breadth of a shilling. Such are to this day in use to kill rooks with, and are shot from a cross-bow.' BIRD'S-EYE VIEW, seen at a glance; seen from a great height, as by a bird. BIRD'S-EYE, a plant—the *Prim'ŭlă farinōsă,* ord. *Primulăcĕæ*—also applied to the *Verŏnĭca chamædrys,* ord. *Scrophulārĭăcĕæ*; a variety of cut tobacco. BIRD-CAGE, an inclosure of wire or wicker-work for the confinement of birds. BIRD-CALL, a little stick cleft at one end, on which is put a leaf of some plant, for imitating the cry of birds; a short metallic cylinder, with a circular perforated plate at each end; used to make a trilling noise, as a decoy for birds. BIRD-CATCHER, one whose employment it is to snare birds. BIRD-CHERRY, a small tree, the *Prunes padus.* It has pendulous racemes of white flowers appearing in May, which are succeeded

by small black drupaceous fruits. In N. Amer., any wild species, with small cherry-like fruits. BIRD-CLASS, a class for teaching birds to imitate the notes of an instrument. There are generally about seven birds in a class. The principle is to shut the class up in a dark room, half-starving the performers till they imitate the instrument, and gradually let in light upon them and partially feed them as a reward for singing. Learning to associate the singing with the gradual appearance of light and the exhibition of food, they sing to obtain these necessaries. BIRD-FANCIER, one who makes a livelihood by trapping, keeping, and selling birds. BIRDING-PIECE, a gun to shoot birds with; a fowling-piece. BIRD-LIKE, resembling a bird. BIRD-LIME, any glutinous or sticky substance spread upon twigs for catching birds. BIRD-LIMED or LIMED, spread to ensnare. BIRD-ORGAN, a small organ used in teaching birds to sing. BIRD-PEPPER: see CAPSICUM. BIRD'S-NESTS, EDIBLE, nests built by the *Collocalia esculenta*, and certain other species of swallows inhabiting Sumatra, Java, China, and some other parts of the East. The nests, which are deemed a luxury by the Chinese, are formed of a mucilaginous substance, secreted by the birds themselves from their salivary glands. The nests are most prized when new, and are eaten only by the Chinese, who value this food, on account of its aphrodisiac qualities. BIRD-WILLED, flighty; incapable of sustained attention. BIRD-WITTED, tending to roam from subject to subject; destitute of concentrativeness. BIRD'S-EYE LIMESTONE, a division of the Trenton group of the Lower Silurian of N. Amer., so named from the dark circular markings studding many portions of its mass; it contans the remains of brachiopods and many enormous orthoceratites. BIRD-TONGUES, a familiar term for fossil shark's teeth. BIRD'S-EYE MAPLE, curled maple, a species of wood used in cabinet work.

BIRD, ARTHUR, American musician: b. Cambridge, Mass., 1856, July 23. He conducted the Milwaukee Musical Festival in 1886 and since that date has lived in Berlin. In addition to a symphony and various pianoforte numbers he has composed a comic opera, *Daphne* (1897) and a ballet, *Rübezahl*,

BIRD, CHARLES, American military officer: b. Delaware 1838, June 17. He entered the volunteer service in 1861, as first lieutenant, 1st Delaware Infantry; was promoted lieutenant-colonel, 9th Delaware Infantry, in 1864; and was commissioned colonel of the 1st United States Veteran Infantry, 1865, Dec. 24. On 1867, March 2, he was brevetted first lieutenant and captain in the United States army for gallantry in the battle of Fredericksburg, major for Spottsylvania, and lieutenant-colonel for Petersburg, Va. He was appointed a second lieutenant, 14th United States Infantry, in 1886; promoted to major and quartermaster in 1895; and was a colonel and quartermaster of United States Volunteers for the war with Spain

from 1898, July 10—1899, May 13. He became brigadier-general of U. S. Volunteers 1901, Jan. 3, and was honorably discharged from the Volunteers 1901, June 20; became brigadier-general in the regular army 1902, April 16, and was retired 1902, June 17.

BIRD, Edward: 1772—1819; b. Wolverhampton, Eng.: 'genre' painter. His father apprenticed him to a Birmingham tea-board manufacturer, his duty being to paint flowers, shepherds, etc., on the boards. On the expiration of his apprenticeship, B. established himself as a drawing-master in Bristol; and two of his pictures, the *Choristers Rehearsing*, and *The Will*, having been bought by the Duke of Clarence, afterwards William IV., and the Marquis of Hastings, his reputation was secure. He was elected a Royal Academician, and soon obtained some good commissions. The *Field of Chevy Chase the Day after the Battle* is generally considered his masterpiece. His *Death of Eli* obtained the British Institution prize of 300 guineas. In 1813, B. was appointed painter to the princess Charlotte. He now became ambitious to excel in Scripture subjects, and painted several, none of which, however, added to his fame. His last picture, the *Embarkation of Louis XVIII. for France*, which was never finished, was the least satisfactory of all his works. His most popular works are: *The Blacksmith's Shop, The Country Auction, The Village Politicians, The Young Recruit*, etc.

BIRD, Frederic Mayer, clergyman and editor: b. Philadelphia, Pa., 1838, June 28. After graduating from the University of Pennsylvania, 1857, he entered Union Theological Seminary, New York, and was graduated thence 1860. He was rector at Spotswood, N. J., 1870–74, and 1881–86 he was chaplain and professor of Psychology, Christian Evidences, and Rhetoric in Lehigh University, and was acting chaplain there from 1896–98. He became editor of *Lippincott's Magazine*, April, 1893, and filled that position until the end of 1898. He was also associate editor, 1894–97, of *Chandler's Encyclopedia*. He edited several collections of hymns and wrote on hymnology, besides contributing largely to various encyclopedias and periodicals. He is author of *The Story of Our Christianity* (1893).

BIRD, Golding, English medical and scientific writer: b. Downham, Norfolk, 1814; d. 1854, Oct. 27. In 1838 he took the degree of M.D. at St. Andrew's, and in 1840 that of M.A. In the latter year he became a licentiate of the Royal College of Physicians, London, and in 1845 was elected a Fellow. In 1843 he was appointed assistant physician at Guy's Hospital, where he also lectured on materia medica; and in 1847 he entered on a three years' course of lectures on the same subject at the College of Physicians. He took an active interest in natural history, chemistry, and other subjects more or less connected with medicine; and his multifarious occupations

overtaxed his strength and undermined his health, so that he died at a comparatively early age. He had by this time acquired a very large practice, and had made his name well known in his profession, more especially by his researches in scientific medicine. A work by which he was more generally known was his *Elements of Natural Philosophy*, for many years a text-book. A well-known work on *Urinary Deposits* was also published by him, as also *Lectures on Electricity and Galvanism in their Physiological and Therapeutical Relations; Lectures on Oxaluria;* etc.

BIRD, Isabella. See Bishop, Isabella Bird.

BIRD, John, English mathematical instrument maker; b. in the county of Durham, 1709; d. 1776, March 31. He set up in London about 1745 as a maker of scientific instruments, having previously received instructions from Graham, the greatest mechanician of the time. In 1749 he received an order to construct a new brass mural quadrant of eight feet radius for the Royal Observatory. This was used by Bradley and by Maskelyne, and continued serviceable for 62 years. Duplicates of it were soon ordered for St. Petersburg, Cadiz, and the Ecole Militaire, Paris—the last employed by D'Agelet and Lalande in determining the declinations of 50,000 stars. He also furnished Bradley with a new transit instrument and a 40-inch movable quadrant. Bird's marked superiority to all other makers of the day is strikingly exemplified by the fact that in 1767 the Board of Longitude paid him £500 on his agreeing to take an apprentice for seven years, instruct other persons as desired, and furnish upon oath descriptions and plates of his methods. A result of this arrangement was the publication of two treatises, named respectively *The Method of Dividing Astronomical Instruments* (1767), and *The Method of Constructing Mural Quadrants* (1768), each with a preface by Maskelyne, the astronomer-royal.

BIRD, Robert Montgomery, American novelist; b. Newcastle, Del., 1803; d. Philadelphia, 1854, Jan. 22. He qualified as a physician, but soon gave up the practice of medicine for literature. He first became known as a dramatist, having written three tragedies,—*The Gladiator; Oraloosa* and *The Broker of Bogota*,—the first of these often acted by Edwin Forrest. His first novel was *Calavar* (1834), his second *The Infidel* (1835)—both of them having their scene in Mexico, at the time of the Spanish conquest. Then followed the *Hawks of Hawk Hollow; Sheppard Lee;* and *Nick of the Woods, or the Jibbenainosay* (1837); the last probably the most popular of all his fictions. Its scene is laid in Kentucky soon after the close of the Revolutionary war, and in it we have a lively picture of pioneer life at this date, and the relentless hostilities between the Indians and the early settlers. He also wrote: *Peter Pilgrim* a collection of tales and sketches; and *Adventures of Robin Day*, a novel.

BIRD-CATCHING SPIDER: name originally given to a large spider, *Mygale avicularia*, native of Cayenne and Surinam; but now more extensively applied, being equally appropriate to a number of large species of *Mygale* (q.v.) and *Epeira* (q.v.), perhaps also of other genera. It has, indeed, been denied by some observers that the name is truly appropriate, but the positive evidence is too strong to be easily set aside by evidence merely negative. The *Mygale avicularia* is nearly two inches long, very hairy, and almost entirely black; its feet, when stretched out, occupy a surface of nearly a foot in diameter. The hooks of its mandibles are strong, conical, and very black. This great spider forms a tube-shaped cell, widening towards the mouth, of a fine white semi-transparent tissue, like muslin, in clefts of trees or hollows among rocks and stones. From this it issues only at night, to prey upon insects, and, it is said, upon humming-birds. It does not construct a net for the capture of its prey, but takes it by hunting, as do other large species of *Mygale*, natives of the warm parts of America, the East Indies, and Africa. The bite of the large species is said to be dangerous.

It appears that spiders of genus *Epeira* feed on small birds caught in their webs, which have even been described as in some cases large enough to arrest the flight of a bird the size of a thrush, and to impede the traveller in tropical forests.

BIRD'-CHERRY (formerly of genus *Padus*): a small sub-division of genus *Prunes;* the flowers of American species appearing after the leaves, unlike other wild cherries and plums, which also belong to *Prunus* and differ not generically from the old genus *Padus*. The foreign B., called in Scotland *Hagberry*, is a tall shrub or small tree, sometimes reaching the height of 40 ft., growing wild in moist woods in Europe and northern Asia. Its younger branches are of a very dark or reddish-brown color. The drupes are small, of a sweetish subacid taste, combined with a degree of what many regard as nauseous bitterness; but to some palates they are not disagreeable. A well-flavored spirituous liquor is prepared from them in the north of Europe. In Siberia, the juice expressed from the ripe fruit is drunk either alone or mixed with milk, and the remaining mass is kneaded into cakes, and used as food.—Nearly allied is the common CHOKE CHERRY (*P. Virginiana*), a tall shrub, N. Amer.; and the WILD BLACK CHERRY *P. serotina*), a tree the wood of which is heavy, fine-grained, takes a fine polish, and is much used by cabinet-makers. The bark is used as a febrifuge. The fruit is not agreeable; but a cordial is made from it by infusion in spirits with sugar, and, when dried and bruised, it forms an esteemed addition to *pemmican* (q.v.).

BIRDE, *bèrd*, WILLIAM: 1540–1623; distinguished ecclesiastical musical composer, educated at Edward VI.'s Chapel. In 1563, he was appointed organist in

Lincoln Cathedral, and twelve years afterward organist to Queen Elizabeth. He published numerous compositions exhibiting great musical learning, and contributed many pieces to Queen Elizabeth's *Virginal Book;* but his fame rests on the canon, *Non Nobis Domine*, which, amid all changes in musical taste, has retained its popularity.

BIRD-GRASS, n. (*Poa trivialis*): also called Rough-stalked Meadow-grass. Its culms are erect from a more or less decumbent base; sheathes and leaves somewhat rough, and roots fibrous: it resembles June-grass, but needs moist soil. It is grown more extensively in Great Britain than in this country.

BIRD ISLAND: n.w. island of the Sandwich archipelago; lat. 22° 20′ n., and long. 160° w. It is, as its name implies, a mere haunt of sea-fowl. The links of this island-chain increase in size and elevation from B. I. on the n.w. to Hawaii on the southeast.

BIRD-LICE, n. pl.: the small parasites frequently infecting birds. Naturalists place them in the insect sub-order *Mallophaga*, allied to the death-tick (*Proudae*), stone-flies (*Perlidæ*) and the white ants.

BIRD-LIME: a viscid and adhesive substance, placed on twigs of trees or wire-netting, for the purpose of catching the birds which may alight thereon. A common practice is to place a decoy or tame bird in a cage near where the B. is spread; the wild birds, attracted to the spot by the song of the tame bird, get intangled with the bird-lime. It is generally prepared from the middle bark of the holly, mistletoe, or distaff-thistle. The bark is stripped off, boiled in water six or eight hours, and the water being strained off, is then left to ferment. This process may take two or three weeks, during which it is watered if necessary. At the end of this time it assumes a mucilaginous form, and after being pounded in a mortar and worked with the hands in water, it is fit for being used. When prepared it is of a greenish color and very tenacious; it consists mainly of a substance named by the chemist viscin.

BIRD-NET, a net used for catching birds. It is about 12 yds. square, and laid flat on the ground, to which it is affixed by four iron pins, its sides remaining loose. Upon it is put a cage with a decoy-bird in it, given to singing cheerfully. When other birds congregate around it, the man, who has been lying concealed twenty or thirty yards off, pulls a string, which makes the loose sides of the net collapse and fly together, imprisoning the birds around the cage.

BIRD OF PAR′ADISE: common name of a family of birds, *Paradiseidæ* of ornithologists, found chiefly of New Guinea and neighboring islands, and remarkable for splendor of plumage. In all other respects, however, they are very closely allied to the crow-family, *Corvidæ*

(q.v.), to which they exhibit a great similarity, not only in the characters of the bill, feet, etc., and in general form, but also in their habits, and even in their voice. They have been the subject of many fables. The state in which their skins are usually exported from their native islands gave rise to the notion that they were destitute of feet; and free scope being allowed to fancy, it became the prevalent belief that they spent their whole lives floating in the air, except when perhaps they suspended themselves for a little by their long tail-filaments from the uppermost branches of trees. As for their food, it was supposed to be either mere dew and vapors, or nectar obtained from the flowers of trees, climbers, and plants growing on the branches of trees, in the high regions of bright sunshine above the shade of the tropical forests. Antony Pigafetta, indeed, who accompanied Magellan in his voyage round the world, described them as having legs, and stated that these were cut off as useless in the preparation of the skins; but his statement was not credited, and Aldrovandus went the length of accusing him of an audacious falsehood. It would seem that the fables concerning the Birds of Paradise are in part to be ascribed to the desire of the inhabitants of those islands in which they are found to increase the value of their skins as an article of merchandise; and a sort of sacred character being attached to them, they were employed not merely for ornament, but as a charm to secure the life of the wearer against the dangers of battle. The people of Ternate call them *Manuco-Dewata*, or Birds of God; which name Buffon modified into *Manucode*. In different languages they are known by names signifying Birds of the Air, Birds of the Sun, etc.

The males alone are birds of splendid plumage, that of the females possessing neither brilliancy of colors nor remarkable development. The plumage of the males is not only characterized by great brightness of tints, but by a glossy velvety appearance, a metallic lustre, and a singularly beautiful play of colors. Tufts of feathers generally grow from the shoulders, and these, in some of the kinds, are prolonged so as to cover the wings; in the species sometimes called the Common Bird of Paradise, and sometimes the Great Emerald Bird of Paradise (*Paradisea apoda*), the prolongation of these shoulder tufts is so great, that they extend far beyond the body, and even far beyond the tail. They constitute the most magnificent part of the well known Bird of Paradise plumes. They are exquisitely light and delicate. It has been supposed that they may be of use to the creature in enabling it, with less exertion of wing, to float in the air, but this notion seems confuted by the total absence of them in the female.—In other species, there are elongated feathers on the back of the neck, which the bird can erect, and even in some measure throw forward at pleasure; and these, in the genus *Lophorina*, assumed a form resembling that of a pair of outspread wings, and

rise far above the head. The tail is, in general, not unlike that of a crow in its shape; but in many species there arise from the rump, at the sides of the tail, two very long feathers, or rather filaments, covered with a sort of velvety down: of these, the Common Bird of Paradise affords an example. In the King Bird of Paradise (*Cincinnurus regius*), these long tail-filaments terminate in a sort of disk, as the tail-feathers of the peacock do.

Birds of Paradise are, in general, more or less gregarious. They sometimes pass in flocks from one island to another, according to the change of seasons from the dry to the wet monsoon. Owing to their plumage, they fly more easily against than with the wind, and by high winds they are sometimes thrown to the ground. They are lively and active, and in confinement pert and bold. They bestow great care upon their plumage, and sit always on the perches of the cage, so that no part of it may reach the floor, or get in the least degree soiled. It has seldom been found possible to bring them alive to Europe, and they seem very incapable of enduring any other than a tropical climate. In confinement, they are easily fed on rice, insects, etc. In a wild state, their food consists in great part of the fruit of the teak-tree, and of different species of fig, and also of the large butterflies which abound in their native lands.

The Papuans kill Birds of Paradise by shooting them with arrows and employ various other means of taking them for the sake of their skins. The skins are dried in smoke, and fumigated with sulphur to preserve them from insects; and in this way the brilliancy of the color is impaired, so that the most gorgeous plumes which are ever seen in Europe are inferior, in this respect, to those of the living bird. The skin, to which great part of the flesh is allowed to remain attached, is always much contracted by this drying process, and a very erroneous notion is therefore often formed of the size of the bird. The common Bird of Paradise is as large as a jay. It is of a cinnamon color, the upper part of the head and neck yellow, the front and throat emerald green, the shoulder-tufts yellow. The whole length to the extremity of these is not less than two ft. Another nearly allied species (*Paradisea rubra*) has these long feathers of a brilliant carmine color.

General information as to the birds of paradise will be found in books of East Indian travel, especially in *The Malay Archipelago* (1869), by Alfred Russel Wallace, the first naturalist to study these birds attentively in their native haunts. As early as 1873, Daniel Elliot completed a magnificent monograph of the family, illustrated with colored folio plates, and in 1881 was published a second monograph, by Salvadori, as a part of his general work on the ornithology of the Papuan region. Still more recently German naturalists have increased our knowledge of this family by many papers in German scientific periodicals, which have been utilized by Rothschild

in the preparation of his account of these birds in *Das Tier-reich* (Berlin 1898). The most recent sketches are those of the *Royal Natural History* (Lond. 1895), and Evans, *Birds* (Lond. 1900).

BIRDS (*Aves*): a class of oviparous, vertebrated animals, possessing warm blood, a double circulation, and distinguished from all other animals by having the body clothed with feathers (q.v.). Birds exhibit great similarity in their general structure; and the class includes nearly all oviparous animals which have warm blood, as well as all animals, except bats (q.v.), which have an internal skeleton, and are capable of true flight. The anterior extremities of birds serve them chiefly as wings or organs of flight, and seldom as arms or legs; those few birds in which the wings are too small to raise the body in the air generally employ them to aid their swift running upon land, as the ostrich, or for swimming under water, as the great auk and the penguins. The general form is adapted to motion through the air, and the trunk is compact and somewhat boat-shaped. The vertebral column possesses little flexibility; indeed, the vertebræ of the back generally become ankylosed or firmly united together by cementing bone, the solidity which is thus acquired being of evident use for the support of the ribs, and these also are proportionately stronger than is usual in quadrupeds; most of them are provided in the middle with a flattened bony process, directed obliquely backwards to the next rib, so that the ribs thus support one another, while instead of being united to the sternum, or breast-bone by cartilages, as in quadrupeds, they are continued to it in the form of bone; all these things combining to give strength to that part of the body in which it is particularly needed, in order to provide the powerful action of the wings, and to permit the perfect freedom of respiration during flight. In those birds, however, which do not fly, the vertebræ of the back retain some power of motion. The hinder part of the vertebral column exhibits a solidity even greater than the anterior part of it, the pelvic or so-called 'lumbar' vertebræ (q.v.), being consolidated into one piece with the pelvis (q.v.), which furnishes attachment to strong muscles for the support of the trunk upon the legs, and for the motion of these organs. The vertebral column, however, terminates in a number of small movable (*coccygeal*) vertebræ, the flexibility of this part being necessary to the motion of the tail, which is itself supported by a short and generally much elevated bone, regarded as consisting of ankylosed vertebræ, called, from its peculiar form, the plowshare-bone.

In contrast to the general stiffness of the vertebral column in the trunk, it is remarkable for great flexibility in the neck, enabling a bird to make ready use of its bill, or to bring its head into such positions as suit the adjustment of the centre of gravity in flying, standing, etc.

The number of vertebræ in the neck varies from 10 to 25,

the smallest number being greater than is found in any quadruped. The head also is so articulated to the neck by a single *condyle*, or pivot, that a bird can turn its head round in a manner impossible to the mammalia. The skull itself is formed of bones corresponding approximately to those of man and quadrupeds; but many of them can be easily distinguished only when the bird is very young, soon becoming fused. The jaws are much elongated, so as to

Skeleton of Golden Eagle:

a, cranium; *b*, upper mandible, or maxilla; *c*, lower mandible; *d*, *d*, vertebræ; *e*, *e*, ribs; *fgh*, sternum; *i*. coracoid bone; *jj*, furcula; *k*, scapula; *ll*. humeral bone; *mm*, ulna: *nn*, radius; *o*, metacarpal bones; *p*, *q*, united sacrum and pelvis; *r*, ischium; *s*, ilium; *tt*, thigh bone; *uu*, tibia; *v*, ankle-joint; *ww*, metatarsus; 1, first or hind toe; 2, second or inner toe; 3, third or middle toe; 4, fourth or outer toe.

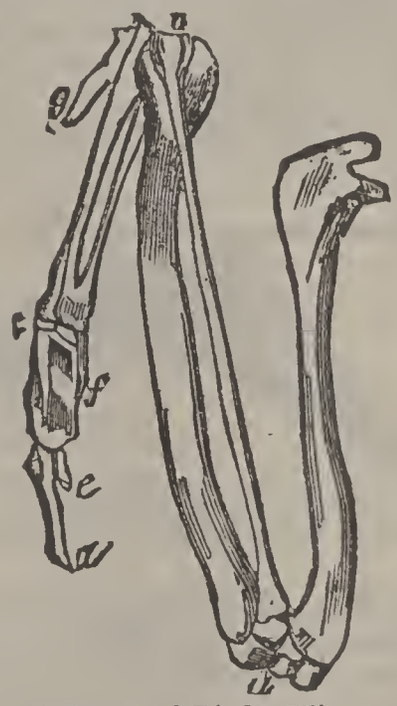
form the bill, the organ chiefly employed in seizing food, as well as for fighting, nest-building, dressing or preening the feathers, and instead of a *hand* for every purpose which bird-life requires. The maxilla, or upper mandible, of the bill, is in most birds firmly connected with the anterior bones of the skull, but in some cases, as in the parrots (q.v.) it is more or less articulated, so that it possesses some power of motion. The bill affords many of the most important distinctive characters of birds, differ-

1. Guide-bird (*Indicator Sparrmanni*).
2. Garden Warblers (*Sylvia curruca and S. rufa*).
3. Guinea Hens (*Numida cristata and N. meleagris*).
4. European Golden Oriole (*Oriolus galbula*).
5. Grakle (*Eulabes religiosa*).

ing very much in the different orders and families. See BILL.

The above illustration will serve to indicate the principal bones of a bird's skeleton; it is from MacGillivray's *British Birds*.

The sternum or breast-bone in birds is remarkably large and strong, serving for the attachment of the powerful muscles which move the wings, and is of considerable value in classification. It generally exhibits a projecting ridge along the middle, proportionately largest in birds of most powerful flight, and wanting only in ostriches and a few similar birds, which do not fly. The clavicles or collar-bones, also, are generally united to form the furculum, 'merry-thought,' or 'wish-bone,' serving, along with two bones called the coracoids, to keep the shoulders separated, and to resist the compressing



Skeleton of Bird's Wing.

tendency of the action of the wings. The bones of the wing itself are regarded as corresponding to those of the anterior extremities in man and quadrupeds; the bones of the hand, however, are much disguised, some of them wanting or rudimentary. In the accompanying cut of the bones of a bird's wing, *a* is regarded as the elbow-joint, *b* as the wrist-joint, *c* as the knuckle-joint, *d* being the representative of a finger, *e* and *f* the rudimentary representatives of two others, while *g* is commonly regarded as representing the thumb. The wings, therefore, exhibit a structure different from those of bats, in which the fingers are extremely elongated. The surface necessary for striking the air is provided by feathers larger and stronger than those that clothe the body, called flight feathers, wing-quills, or sometimes, but less accurately, simply quills; and they exhibit an admirable combination of strength with lightness and elasticity. Some of them

spring from the part of the wing between *b* and *d* (in the figure of the bones of the wing); these are usually the largest, and are called *primaries;* those which spring from the part between *a* and *b* are called *secondaries;* while those which spring from on or near the elbow-joint are called *tertiaries*. Covering the bases of the quills, on both sides of the wing, are feathers called *wing-coverts*, those above distinguished as primary and secondary. The few short quills that spring from the thumb are called bastard quills, *alula*, or winglet. The feathers that grow over the shoulder-blades are called *scapulars*. The feathers of the wings vary in length and strength, according to the mode of life and power of flight in different birds; narrow, sharp, and stiff wings being indicative of swift and enduring flight. Flying is accomplished by the strokes of the wings upon the elastic and resting air; and the muscles by which this is performed are very powerful. Owing to the manner in which the first strokes of the wing must be given, heavy birds rise usually with difficulty from a level surface. The tail-feathers serve the purpose of a rudder to quide the bird, and also that of aiding to bal-

Bird's Wing, Showing Quills:
a, primaries; *b*, secondaries; *c*, tertiaries; *d*, alula.

ance it in the air; they resemble in character the quills of the wings. They are also furnished with *coverts* above and below. Some birds have the tail rounded at the extremity; in some, it is square, in others, notched, or forked. In many land birds the tail exhibits ornamental plumes; and remarkable developments of the plumage take place in also other parts of the body, in the form of crests, ruffs, shoulder-tufts, etc.

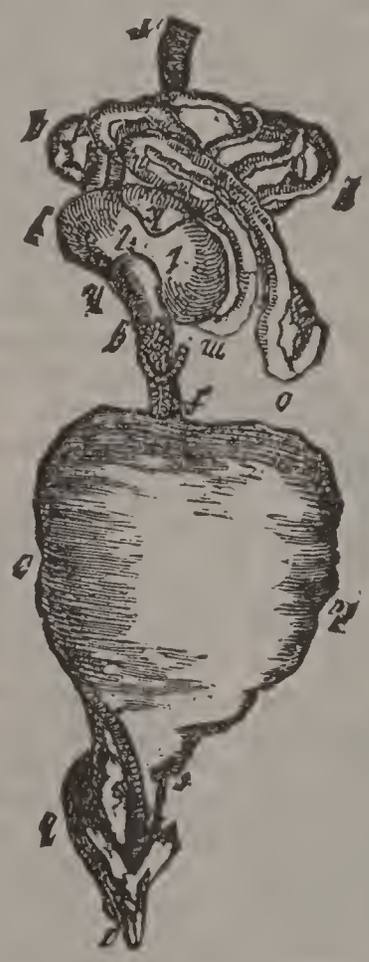
The legs of birds consist of parts corresponding to those found in man and quadrupeds; but the thigh is short, and so concealed within the body that it is not apparent as an external portion of the limb; the next division, often mistaken for the thigh, being the leg strictly so called, or *tibia*, which ends at what is really the heel-joint, although popularly regarded as the knee; and beneath this is the shank, or *tarsus*, which in some birds is very long, serving as a part not of the foot but of the leg, and formed by a single bone which is really the metatarsus. The feet are divided into toes, generally four in number, three before and one behind, differing from each other in length and in the number of joints or phalanges of which they are composed; the toe that is directed backward being often

comparatively short, and consisting of not more than two joints. In some birds, as bustards and most plovers, the hind-toe in wanting; the ostrich has only two toes, both directed forward; and numerous birds sometimes called yoke-toed birds, including parrots, cuckoos, wood-peckers, etc., have two toes before, opposed by two toes behind, the foot being thus particularly adapted for grasping, so that parrots, as is well known, use it as a hand. On the (meta) tarsus of many gallinaceous birds a horny spur is found, but this is in no sense an additional toe, being used, if at all, as a weapon of defense or offense. The feet of birds vary considerably; and are valuable for purposes of classification. In some the claws are strong and hooked; in others short, straight, and weak; in some the toes are all separate, in others more or less connected; in birds specially adapted for swimming, they are generally *webbed* or united by a membrane; in other swimming birds, however, a membrane extends only along the sides of each toe. In most birds the leg is feathered to the ankle joint; in some, however, and particularly in *waders*, the lower part of the tibia is bare; the shank and toes are generally, although not always, destitute of feathers, and are covered with a scaly skin. Almost the only other parts of a bird often destitute of feathers are the *cere* on the base of the upper mandible of the bill, and the combs and wattles of gallinaceous birds. In some birds, however, the skin around the eyes or about the base of the bill, or even the entire head and neck, is bare.

In order that a bird may fly, it is indispensable that its centre of gravity should be below the shoulders. When a bird stands, the feet are brought forward, and the head thrown back, so that the claws project beyond a vertical line passing through the centre of gravity of the whole body. This is generally accomplished so that the trunk is in an almost horizontal position, the forepart only a little elevated; but in some birds which have a short neck and short legs, an erect attitude is necessarily assumed, so that the penguins of the southern seas present to navigators a somewhat ludicrous resemblance to regiments of soldiers on the beach. Birds, when they sleep, very generally place the head under the wing, and some of them also stand upon one foot. A remarkable contrivance, particularly to be observed in storks and other long-legged birds, renders the latter posture unfatiguing; a locking of the bones of the foot with the leg, so that the foot retains its place without muscular exertion; while in many birds a similar purpose is served by the tendons of the muscles which bend the claws, since these tendons pass over the joints of the leg in such a manner as to be stretched by the mere pressure there when the weight of the bird rests upon the legs, so that without any effort the claws retain a firm hold of the branch upon which the bird is perched.

The digestive apparatus of birds resembles that of mammalia; exhibiting, however, various modifications,

according to the different kinds of food—some birds feeding on flesh, others on fish, others exclusively on insects, others on seeds, others more indiscriminately on a variety of animal and vegetable substances. Few birds masticate their food in any degree, though parrots often do; upon being swallowed, it enters the *crop* or *craw*, sometimes called the first stomach, an enlargement of the esophagus or gullet, situated just before the breast-bone, and here it is moistened by a secretion, which by some birds—particularly pigeons—is employed as food for their young, the glands of the crop becoming more than usually active, so as to produce it in large quantity at the time when it is wanted for that purpose. The crop is wanting in the



Digestive Organs of Domestic Pigeon:

a, bill; *b*, head; *c*, esophagus; *de*, crop of extreme size; *f*, continuation of esophagus; *g*, proventriculus; *hijkl*, gizzard; *h*, upper muscle; *i*, *j*, lateral muscles; *k*, lower muscle; *l*, tendon; *mnopqr*, intestine; *s*, trachea.

ostrich, also generally in birds that feed mostly on fish or insects, and in many others; and is of greatest size in those of which the food consists of seeds or grain, as pigeons and gallinaceous birds. It is generally single, but in pigeons it is double. The esophagus is, at its lower end, modified into a special tract, with or without special enlargement, but provided with glands which secrete the true digestive fluid. This is the first part of the true

stomach, and is called the *proventriculus*. The second part is the *gizzard*, which in birds of prey, fish-eating birds, and others, is a mere membranous sac; but in birds like most gallinaceous species, which feed on grain or seeds, is very thick and muscular, so that it acts as a sort of mill, and with extraordinary power. In these birds, also, a remarkable provision is made for the perfect grinding down of the contents of the gizzard, by the instinct which leads them to swallow pebbles or grains of sand, an instinct well exemplified in the common domestic fowl. The liver of birds is, in general, of moderate size. The kidneys are large, but there is no urinary bladder, and the urine is at once poured into the *cloaca*, an enlargement of the intestine, at its termination, with which also the organs of generation communicate in both sexes. The following cut is from MacGillivray's *British Birds*.

The respiration of birds is very perfect; the blood averages about 15° warmer than that of mammalia and its circulation is more rapid so that the energy of all the vital processes is proportionally great. Birds, consequently, exhibit great liveliness; and upon the admirable provision for the aeration of their blood they depend also for their powers of flight, which enable some of them to travel hundreds of miles with great rapidity and without exhaustion, and others to soar to a prodigious height in the air. The heart resembles that of the mammalia in its form and structure. The lungs are small, and communicate with large air-cells in the cavities of the body, and even in the bones, so that the aeration of the blood takes place not only in the lungs but during its circulation through the body. An extraordinary proof of the use of these air-cells in respiration was afforded in a recorded instance of a large sea-fowl, which when an attempt was made to strangle it, was kept alive by the air's entering in a forcible current through a broken wing-bone. (Gosse, *The Ocean*, quoting Bennett's *Whaling Voyage*.) Birds consume much more oxygen in proportion to their size than quadrupeds.

The brain in birds differs in some important respects from that of mammalia (see BRAIN), presenting resemblances to the brain of reptiles and fishes; but it is of large size, often comparatively larger than even in quadrupeds. The manifestation of intelligence is not, however, usually so great in birds as in quadrupeds. Their nest-building, their migrations (see BIRDS OF PASSAGE), and many other things of greatest interest, must be ascribed to instinct.

The organs of the senses are similar to those of mammalia. In the senses of touch and taste, it is generally supposed that there is an inferior development, although parrots appear to possess the sense of taste in considerable perfection; and the bills of some birds, which search among the mud for their food, are certainly very delicate organs of touch. But the sight is remarkably keen, and the eye possesses great powers of accommodation to differ-

ent distances. Birds perceive even small objects distinctly, at distances at which they would be quite indistinguishable to the human eye, and thus are aided in seeking their food. The sense of smell is apparently not greatly developed, but some birds, like vultures, seem to possess it to a considerable degree. The nostrils of all birds open on the upper or the lateral surface of the bill. Hearing is acute in birds, and particularly in nocturnal birds, although the organs of this sense are less complicated than in mammalia, and there is seldom any vestige of an external ear. Singing-birds are extremely sensitive to differences of pitch. The voice and musical powers depend upon the conformation of the windpipe and syrinx, which differs very much in different birds.

Reproduction takes place by eggs (see REPRODUCTION and EGG), hatched after they have passed from the body of the mother. Birds generally sit upon their eggs, their bodies supplying the warmth necessary to hatch them (see INCUBATION); and this office is usually undertaken by the female alone, but sometimes is shared or, exceptionally, performed alone by the male. In very warm climates, the ostrich sometimes leaves her eggs to be hatched at least partially, by the heat of the sun, but in colder climates sits upon them like other birds. A few birds, as many cuckoos, and the cowbirds, deposit their eggs in the nests of other birds to be hatched by them. Some birds construct no nest, but lay their eggs on the bare rock, as many sea-fowl do, or in holes rudely scratched in the earth or sand; many, however, show in the construction of their nests the most admirable instincts (see NESTS). The number of eggs varies, in a state of nature, from 1 to about 35, being smallest in some sea birds and some birds of prey; and largest in gallinaceous birds. Birds generally breed only once or twice a year, but some birds as many as five or six times. The care which birds take of their young is as admirable as the ingenuity which they display in nest-building, and more universal. Some birds are able to run about and pickup food as soon as they leave the shell; others remain in the nest for days, or even weeks, and must be supplied with food by their parents. Many species are social, particularly at the breeding season, and form large settlements, which they guard in common; and some even unite in the construction of large nests, which belong to a whole community. The rapacious birds and particularly the larger ones, are very solitary in their manner of life.

Most birds change their feathers (molt), once or twice a year, although some species more frequently; and the colors of the plumage in many cases vary much in summer and winter. In birds which molt both in spring and autumn, the autumn molting is often more complete than that of spring. The gayest plumage of many birds is assumed at the breeding-season, with which, also, the song of birds is connected. See SONG OF BIRDS. The plumage of the male is, in general gayer than that of the

female, all the young at first resembling the female in plumage. The plumage usually characteristic of the male is occasionally assumed by the female.

In the geographical distribution of birds, the limits of species are not so exactly circumscribed by mountains, seas and rivers, as in some other classes of animals, their powers of flight enabling them to pass over these obstacles. Yet, of course, many species and groups are found exclusively in certain regions; thus humming-birds all are American, penguins are found only in the southern seas, birds of paradise are confined to New Guinea and the neighboring islands, and many other examples might be cited to show the value of birds marking out zoogeographical areas. See SPECIES.

The free movements of birds through seemingly boundless space, the joyous song of many, and the characteristic notes of all—their brilliant colors, their lively manners, and their wonderful instincts—have from the earliest ages made a strong impression on men's minds, and have given rise to many peculiar and mysterious associations with this class of creatures. Thus the flight of birds was made the foundation of a particular art of divination. See AUGURIES and AUSPICES. Religion has borrowed many of its symbols from them, and poetry many of its ornaments.

From an economic point of view, birds are very important. Many of them are well-known as objects of sport, and in some places these form a valuable food supply. Others, domesticated and kept as poultry, are a source of great profit. See POULTRY. Some birds of prey have been tamed, and trained to the use of the sportsman. See FALCONCRY. But the very most important mission of birds is their never-ceasing warfare on all forms of insect life, without which check agriculture would be impossible. They also destroy immense quantities of the seeds of noxious weeds.

About 12,000 to 13,000 living species of birds are known. For their systematic arrangement, see ORNITHOLOGY; ZOOLOGY.

Principally through the agency of man, but sometimes from various natural causes, a number of birds have become extinct within comparatively recent times, and the list is constantly growing. Perhaps the most famous instances of such extinction are those of the Dodo (q.v.) and the Great Auk (q.v.), although the Pallas Cormorant and the Labrador Duck are almost as interesting.

BIRDS, FOSSIL: the remains of birds occurring in sand, clay, or rock are not so numerous as those of some other animals. As early as 1835 there were found in the sandstone of the valley of the Connecticut River footprints of gigantic size, which were long supposed to have been made by birds, and were given the name *Ornithichnites* (Greek *ornis, ornithos,* bird; and *ichnos,* a track); but they are now considered traces of reptiles rather than birds. The earliest known bird, geologically speaking, is the

Archæopteryx (q.v.), discovered in Jurassic rocks in Bavaria, and which represents the lowest known type of true bird—a link, as it were, between birds and reptiles. The next epoch in which birds occur is the Cretaceous, and here their remains become somewhat numerous. A few genera have been unearthed in Europe, but a much larger number come from the United States, principally Kansas and New Jersey. Among the latter are the well-known *Hesperorius* (q.v.) and *Ithhyorius* (q.v.) both, like *Archæopteryx*, possessing teeth, and otherwise so peculiar that they were placed by their describer, Professor O. C. Marsh, in a separate 'subclass' of birds, *Odontornithes* (q.v.), a grouping, however, that apparently cannot be maintained. Other of these American Cretaceous birds of which less is known are *Palæotringa*, *Graculavus*, and the big *Laornis*. In the Lower Eocene we find the giant *Gastorius* (q.v.) much larger than an ostrich, which when alive roamed France and England. Another curious form from this horizon in southern England is the *Odontopteryx*, which had jaws with edges much like a fine saw. About this time, too, flourished the gigantic *Phorusrhacos* (q.v.) and *Brontornis*, from southern South America, whose discovery is one of the most remarkable of recent years. In the Upper Eocene, particularly of France, bird remains are comparatively common, and many are referable to existing families as well as genera, including some passerine forms, which are remarkably rare as fossils in any epoch, even the most recent. Here, among others, occur rails, sandpipers, cranes, cormorants, ibises, grouse, quails, hawks, owls, and woodpeckers. The Miocene deposits have in France yielded many forms, and the whole fauna has a decidedly modern facies, though it includes, of course, a number of extinct genera, most of which, however, belong to existing families. The presence of a number of tropical forms in Europe at this period is worthy of note. Some of the most interesting of the near allies of existing forms are ducks, eagles, owls, trogons, parrots, woodpeckers, swifts, crows, shrikes, and wagtails, mostly of course extinct species, and in most cases congeneric with birds of the present day.

The birds of the Pleistocene period are largely identical, many of them specifically, with those now living in the same regions, and the greater part of them are therefore not of special interest. The recent discovery of a number of new forms in the very rich Pleistocene or upper Pliocene deposits about the lakes of Southern Australia is perhaps worth mentioning. The immense *Æpyornis* (q.v.) which inhabited Madagascar, and the giant bird of New Zealand, the *Dinornis* (q.v.) or *Moa*, and its allies, are, however, now extinct, though the *Moa* is known to have been alive at no very remote period. Many bird remains have been found in caves and in other similar places, but, with relatively few exceptions, these are all referable to living species.

BIRD'S FOOT (*Ornithopus*): genus of plants of nat. ord. *Leguminosæ*, sub-order *Papilionaceæ*, deriving both its popular and its botanical name from the resemblance of the curved pods to bird's claws; the leaves are pinnate, with a terminal leaflet. One species (*O. perpusillus*) is a native of Britain. *O. sativus*, an annual growing to the height of two or three ft., a native of Portugal, is cultivated in that country as green food for cattle, and is very succulent and nutritious. Like its British congener, it grows well on very poor soils. Its Portuguese name is Serradilla.

BIRD'S FOOT TRE'FOIL (*Lotus*): genus of plants of the nat. ord. *Leguminosæ*, sub-order *Papilionaceæ*. The pods are cylindrical, somewhat spongy within and imperfectly divided into many cells. The name bird's foot trefoil is derived from the resemblance of the clusters of pods to a bird's foot. It has received the name *Lotus* from botanists, because a species of this genus is supposed to have heen one of the plants so named by the Greeks. See LOTUS. The species, which are numerous, are natives of the temperate and colder regions of the old world. The COMMON BIRD'S FOOT TREFOIL (*L. corniculatus*) is abundant everywhere in Britain in pastures. It has a stem 6–12 inches in length, decumbent, and bearing umbellate heads of 8–10 yellow flowers, which have a rich honey-like smell. The leaves have three obovate leaflets, like those of the true Trefoils or Clovers, but at the base of each leaf-stalk there are also two large leaf-like ovate stipules. The plant is by some regarded as the shamrock (q.v.) of Ireland. It is eaten with great avidity by cattle, and its deeply penetrating roots adapt it well for very dry situations.—A larger species, otherwise very similar, by many regarded as merely a more luxuriant variety of this, with stem nearly erect, more compact heads of smaller flowers, and much smaller seeds, is the GREATER or NARROW-LEAVED BIRD'S FOOT TREFOIL (*L. major*) which also is a common native of Britain, generally found in moist, bushy places. The characteristic differences remain under cultivation in every variety of soil and situation.—A species called the Winged Pea (*L. tetragonolobus*), remarkable for four membranous wings which run along its pods, a native of the south of Europe, is in some places cultivated for its seeds, as a substitute for coffee.

BIRDS OF PASSAGE: those birds which spend one part of the year in one country or climate and another part in another, migrating according to the season. No species of bird is known to hibernate (see HIBERNATION), and although many naturalists were at one time inclined to believe in the hibernation of swallows, this opinion has been entirely relinguished, and their annual migrations are fully ascertained. Birds avail themselves of their powers of wing to seek situations adapted for them in respect of temperature and supply of food, and even within the tropics there are birds which migrate as the seasons

change from wet to dry, or from dry to wet. See BIRD OF PARADISE. The migration of birds, however, is more generally from n. to s., or from s. to n. in the temperate and colder regions of the globe, as winter passes into summer, or summer into winter; and birds of passage are commonly distinguished into summer birds of passage and winter birds of passage, as they are summer or winter visitants; but, of course, those which are summer birds of passage in one country are winter birds of passage in another. They breed in the country in which they are summer birds of passage. The arrival of summer birds of passage is always among the welcome signs of advancing spring, and has most cheerful associations. In winter, flocks of swans, geese, and other waterfowl from the frozen north seek the coasts and inland lakes and marshes of the middle and southern states, and of Britain; and at the same time, woodcocks, fieldfares, redwings, and many other birds which breed in more northern regions, regularly appear. Some birds come almost at the same date annually; others are more influenced by the character of the season, as mild or severe. Many seafowl are migratory, and the inhabitants of St. Kilda and other isles, to whom they are of the greatest importance, depend with confidence upon their return almost at a particular day. The migrations of pigeons in North America are remarkable from the vast numbers of which the migrating flocks consist. See PIGEON. The whole subject of the migration of birds is one of great interest, particularly in reference to the instinct by which they appear to be guided. Birds of migratory species, which have been reared in confinement, become restless when the season for migration arrives, and in many species the migration seems to be little influenced by the state of the weather. It seems that the youngest swallows are left behind, to follow the first migrating hosts of their species. The number of birds of passage is very considerable, nor are they all or mostly birds of long wing and powerful flight, but many short-winged birds are included among them. Some birds of passage, as woodcocks, have, however, been found in a very exhausted state after their arrival; and it is to be considered that, both in the old and new world, distant migrations are possible without long flights. Some birds possess such powers of wing, that they may easily pass over wide seas; and the rapidity of the flight of birds—from 50 to 150 m. an hour—partly explains the possibility of their migrations between distant parts of the world. It is believed that birds of passage habitually return to the same localities which they have inhabited in former years; and this seems proved at least in regard to swallows.

BIRDS OF PREY: a common English appellation of the order of birds called *Raptores* (*Accipitres, Linnæns*). Some birds, however, which do not belong to this order, frequently pursue and prey upon other birds. If those which feed on fishes, insects, and worms were also reckoned, great part of the whole class of birds must be con-

BIRDS OF PREY.

1. The Carrion Crow (*Catharista atrata*).
2. The King Vulture (*Sarcorhamphus papa*).
3. The Turkey Buzzard (*Catharista aura*).
4. The Pileated Vulture (*Neophron pileatus*).
5. The Condor (*Sarcorhamphus gryphus*).

sidered predaceous. Birds of prey are very commonly divided into two sections—*Diurnal* and *Nocturnal;* the the latter exclusively owls.

BIRDSALL, *bėrd'săl,* WILLIAM W., American educator: b. Richmond, Ind., 1854. He was graduated from Earlham College, Indiana, 1873 and was a successful teacher in and head of large secondary schools until 1898. He was president of Swarthmore College, Pennsylvania, 1898–1902.

BIRDWOOD, *bėrd'wûd,* HERBERT MILLS, English lawyer: b. Belgaum, Bombay Presidency, 1837, May 29. He was educated at Edinburgh Univ., and was dean of arts (1868, 1881, 1888, 1890) and syndic at the Bombay Univ., and vice-chancellor 1891–2. He entered the Bom bay civil service 1858; was made assistant collector and magistrate 1859; assistant judge 1862; under secretary to the government, judicial, political, and educational departments, and secretary of the legislative council 1863; acting registrar of the high court, Bombay, 1867; district judge for Ratnagiri, Surat, and Thana 1871–80; judicial commissioner and judge of the sadar court, Sind 1881; three times acting judge of the high court, Bombay 1881–5; puisne judge of the high court of Bombay 1885–92; and member of the executive council of the governor of Bombay 1892–7. His publications include *Catalogue of the Flora of Matheran and Mahableshwar, Catalogue of Bills Introduced into the Bombay Legislative Council in* 1862–5; and papers relating to the constitution of the council, the plague in Bombay, etc.

BIRGE, *bėrj,* EDWARD ASAHEL: an American naturalist; b. 1851, Sept. 7; graduated at Williams College, 1873, and studied physiology and histology at Leipsic 1880–81; was made prof. of zoology at the Univ. of Wisconsin 1879, and dean of the college at letters and science 1891. He became director of the Geological and Natural History Survey of Wisconsin 1894, and was acting pres. of the Univ. of Wisconsin 1900–1901. He has written many papers on zoology.

BIRGE, HENRY WARNER, American soldier: b. Hartford, Conn., 1825, Aug. 25; d. New York, 1888, June 1. At the outbreak of the Civil War he organized the 4th regiment Connecticut Volunteers, and was commissioned its major 1861, May 23. In November 1861 his uncle, Gov. Buckingham of Connecticut, appointed him colonel of the 13th Connecticut Volunteers, which joined Butler's army at New Orleans. He took part in the siege of Vicksburg and the first Red River campaign; commanded a division in Grant's Virginia campaign; and was with Sheridan in the latter's most brilliant movements in the Shenandoah valley. In November 1865 he resigned with the rank of brevet major-general.

BIRK'ENHEAD: market-town, seaport, and parliamentary borough in the parish of Didston, and hundred and union of Wirral, Chesire; opposite Liverpool, on the left bank of the Mersey. The parliamentary borough,

constituted 1861, when one of the seats rendered vacant by the disfranchisement of Sudbury and St. Albans was assigned to it, includes, besides the chapelry of B., the townships of Claughton, Oxton, Tranmere, and part of Higher Bebington. B. has within the last few years risen from comparative obscurity to its present important position. No later than 1818, it had only a few straggling houses, and the population numbered 50. In 1821 it amounted only to 236. The principal streets of B. are laid out with great regularity, crossing each other at right angles, and about 20 yards wided; but the back streets are narrow and the houses mean. The park is a splendid feature of B., consisting of 190 acres. A railway bridge over the Mersey at Runcorn, opened for traffic in 1869, shortened by 10 miles the distance between the Liverpool and Birkenhead docks; and the Mersey railway tunnel, 1,230 yards long, was opened by the Prince of Wales 1886, Jan. 20. It is to the docks chiefly that B. owes its development and prosperity.

B. has for some years been celebrated for its ship building yards, some of the largest iron ships afloat having been built there.

B. owes its origin to a Benedictine priory founded there in the 12th c., of which some remains are still seen. Edward II. granted the entire monopoly of the ferries to its monks. The remains of the monastery are still in a tolerable state of preservation, exhibiting some fine specimens of the English architecture of the period of its foundation. Pop. of B. parliamentary borough (1901) 110,906.

BIRKETT, *bėrk'ĕt*, Herbert Stanley, Canadian physician: b. Hamilton, Ont. 1864, July 17. He graduated at McGill University in 1886; was senior house surgeon to the Montreal General Hospital 1886–7; and assistant physician to the Montreal Dispensary 1887–9. He is a Fellow of the American Laryngologist Association. In 1889 he was appointed demonstrator of anatomy at McGill University, and in 1900 was laryngologist to the Montreal General Hospital, and aurist to the Mackay Institute for Deal Mutes.

BIR'MAH: see Burmah.

BIRMINGHAM, *bėr'mĭng'ăm*: city, seat of Jefferson co., Ala., a prosperous iron-mining and manufacturing centre, 96 miles n.w. of Montgomery, the State capital, entered by the Kansas City, Memphis & Birmingham, the Southern, the Alabama Great Southern, the Louisville and Nashville, and the Seaboard Airline railroads. It lies at the foot of Red Mountain, at an altitude of 600 ft., on a level plain between two ranges of hills, and is well laid out, its settlement dating from its establishment by a land company in 1871. The large and accessible veins of hematite iron ore and vast limestone deposits of Red Mountain, and the neighborhood of the Warrior Coosa, and Cahaba coal-fields, have made Birmingham

the most important manufacturing city in the South; 6,000,000 tons of coal, 1,500,000 tons of coke, 2,000,000 tons of iron ore, and more than 1,000,000 tons of pig iron, approximately, are annually produced in the city and its immediate vicinity. The various manufacturing industries, stimulated by northern capital, numbered, according to recent statistics 283 establishments, employing $7,434,654 capital, of this $5,461,358 were for iron and steel products, which employed 2,040 hands. The steel and iron works, foundries and machine shops are among the largest in the country, and there are also cotton factories and oil mills, packing houses, and other large industrial establishments.

The County Court-house, theatre, opera-house, union railroad depot, public schools, public library, and numerous churches are prominent city buildings which also include Howard College (Bapt.), Northern Alabama College (Meth. Episc.), Colored Normal Training School, Hillmanan Sisters of Charity hospitals, and the Davis and Davis, and the Brown and Wilson infirmaries. Three beautiful parks, an extensive waterworks system, good sewerage, gas and electric street lighting, and an excellent equipment of street railroads connecting with the populous suburbs, add to the city's advantages. The assessed property valuation exceeds $20,000,000. Pop. (1890) 26,178; (1900) 38,415; (1910) 132,685.

BIRMINGHAM: chief town in Britain for metallic manufactures, and supplying much of the world with hardwares; near the centre of England, in the n.w. of Warwickshire, with suburbs extending into Staffordshire and Worcestershire, 112 m. n.w. of London. It is well drained; and contamination of the atmosphere by smoke is largely prevented. Among the finer buildings are the post-office, the corporation buildings, the town hall, the exchange, the rooms of the Royal Society of Artists. B. began very early to be the seat of iron manufactures, from its vicinity to a forest and extensive iron mines; but its industry and trade were long small. Its high commercial importance dates from the 17th c., when the restoration of Charles II. brought from France a fashionable rage for metal ornaments, and B. supplied the demand with unexampled vigor. From being the 'toyshop of Europe' of Burke's time, B. now constructs steam-engines, hydraulic-presses, and crystal palaces; and its hardwares are unequalled in the world for quantity, variety, and value. It produces upwards of £5,000,000 worth of goods yearly, chiefly articles of gold, silver, iron, brass, steel, mixed metal, plated metal, glass, papier-machè, japanned and electrotyped articles; including firearms, ammunition, swords, metal ornaments, toys, jewelry, buttons, buckles, lamps, pins, steel pens, tools, locks, bedsteads, saddlery, steam-engines, and all sorts of machinery. The manufacture of firearms is one of the most important industries, B. supplied the government with 3,000 muskets

weekly during the Crimean War. B. has more than 170 places of worship, about 60 of the establishment; a grammar school; a queen's college; the admirably equipped science college, founded by Sir Josiah Mason 1880, occupying a handsome building in the heart of B.; a literary and scientific institute (the Midland Institute); a free library, with branches; a Rom. Cath. college and cathedral; a botanic garden; an art gallery; and four public parks. The town-hall, a marble edifice, is noted for the great musical festival held there once in 3 years, the proceeds being devoted to the General Hospital. Thomas Attwood originated the Political Union here, which greatly hastened the passing of the Reform Act of 1832, and the enfranchisement of Birmingham. B. returns 7 members to Parliament. Pop. (1690) 4,000; (1801) 60,822; (1851) 232,841; (1871) 343,787; (1881) 400,774; (1891) 429,171; (1901) 522,182.

BIR'NEY, *bėr'nĭ*, James Gillespie: statesman: 1792, Feb. 4—1857, Nov. 25; b. Danville, Ky. He graduated at Princeton Coll., 1810, studied law in Philadelphia with A. J. Dallas, returned to Danville, where he began practice; was elected to the Ky. legislature 1816, and at once began the opposition to slavery which he continued during his life. He settled in Huntsville, Ala., 1818, became a member of the legislature, and afterward solicitor of the northern circuit of the state, besides being several times mayor of Huntsville. He returned to Kentucky 1833, and began again to agitate against slavery, freed his own slaves 1834, formed the Kentucky Anti-Slavery Soc. 1835, and the same year removed to Cincinnati, O., on account of the excitement caused in Ky. by his reformatory views and acts. Here he established the *Philanthropist*, one of the first abolition papers, and began a propaganda in the north by delivering speeches and lectures in principal towns and cities. His newspaper office in Cincinnati was several times attacked by mobs, and his press destroyed. He was appointed sec. of the Amer. Anti-Slavery Soc. 1837, and removed to New York, where he soon became a power. In 1839 he emancipated 21 slaves which had come to him by inheritance. In 1840 and 44 he was nominated by the liberty party (precursor of the republican party) their candidate for the presidency, receiving (1840) 7,369 votes, (1844) 62,263.

BIRNEY, William, soldier, lawyer: b. near Huntsville, Ala., 1819, May 28; son of James G. B. He studied at Centre Coll., Ky., and at Yale (graduating 1841); also in Berlin, Prussia; and became at Bourges prof. of Eng. literature in the Univ. of France 1849. Returning to the United States, he entered the Union army as capt. 1861, Apr., and was constantly in active service in Va. and elsewhere until 1863. His promotion was rapid, reaching the brevet rank of maj. gen. U. S. vols. He was engaged 1863–4 in organizing colored troops, and sent 7 full regts. to the front. He was appointed dist.

atty. in Fla. 1872; settled in Washington as a lawyer 1874, and was atty. for the Dist. of Columbia 1874–78. He wrote *Life and Times of James G. Birney; Genesis of the Republican Party*, etc.

BIRNIE, *bėr'nĭ*, ROGERS: military officer, engineer: b. Carroll co., Md., 1851, Apr. 5. He graduated first in his class at the U. S. Milit. Acad. 1872; was transferred from the inf. to the ordnance dept. 1878; and was promoted capt. 1886. In the latter year he was assigned to the office of the chief of ordnance, Washington. B. has contributed largely to the development of the science of modern gun construction, and is an authority and voluminous writer on subjects relating to this branch of the service.

BIRON, *bē'ron* or BI'REN, ERNEST JOHN DE, Duke of Courland: 1687–1772, Dec. 28; son of a landed proprietor in Courland, of the name of Bühren. He studied at Königsberg, and in 1714 visited St. Petersburg, where his handsome person and cultivated mind soon gained him the favor of Anna Ivanovna, niece of Peter the Great. When Anna ascended the throne of Russia, 1730, Biron repaired to court, and was loaded with honor. He assumed the name and arms of the French dukes De Biron, and soon swayed all Russia through his royal mistress. Proud and despotic by nature, he hated every one who stood in the way of his ambition. The princes Dolgorucki and their friends were his first victims. More than a thousand persons were put to death by his orders, and a still greater number sent into banishment. It is, however, undeniable, that by the strength of his character he introduced vigor and power into every branch of the public administration throughout Russia. In the year 1722, he married a Courland lady, and in 1737, the Courlanders were compelled to choose him as their ducal ruler. By his desire the empress, on her death-bed, appointed him guardian and regent during the minority of her presumptive heir, Prince Ivan. On the death of the empress (1740, Oct. 28), Biron assumed the regency, and acted with great prudence and moderation. A secret conspiracy was, however, soon formed against him, and on the night of Nov. 19 he was arrested, tried and sentenced to death. His sentence was afterwards commuted to imprisonment for life, and confiscation of his property. When, in the following year, Elizabeth ascended the throne of Russia, B. was recalled. During the remainder of Elizabeth's reign, B. continued to reside with his family at Jaroslaw. The empress Catharine II. restored to him the Duchy of Courland.

BIRRELL, *bėr'rĕl*, AUGUSTINE: an English author; b. Wavertree near Liverpool 1850, Jan. 19; was graduated at Cambridge University 1872; called to the bar at the Inner Temple 1875. From 1889–1900 he represented Fifeshire W. in Parliament; from 1896–9 was Quain professor of law in University College, London; and in 1903

became a Bencher of the Inner Temple. He is known as the author of fascinating critical and biographical essays on literary subjects, *Obiter Dicta, Res Judicatæ, Men, Women, and Books, Life of Charlotte Bronte; Life of Sir Frank Lockwood; Law and History of Copyright; Collected Essays; Lectures on the Duties and Liabilities of Trustees* (1896); *Miscellanies* (1901); *William Hazlitt* (1902); and edited *Boswell's Life of Johnson.* In 1905 he became a member of the British Cabinet and prest. of the board of education. In 1907, January, he became Chief Secretary for Ireland.

BIRS: small but famous affluent of the Rhine; rises in the canton of Bern, Switzerland, near the pass of the Jura called Pierre Pertuis, flows n.e. through the Münsterthal, and enters the Rhine near Basel. In a narrow gorge through which the stream breaks, at a little distance from that city, 500 confederate Swiss died heroically, 1444, Aug. 26, in battle against the French army under the Dauphin Louis. On the same river, near the village of Dornbach, about a mile and a half s. of Basel, 6,000 confederate Swiss gained a splendid victory over 15,000 Austrians, under Fürstenberg, 1499, July 22; in consequence of which, the Emperor Maximilian signed a peace at Basel, Sep. 21 following.

BIRS NIMRUD: see BABEL, TOWER of.

BIRT, n. *bėrt;* see TURBOT.

BIRTH, n. *bėrth* [AS. *beorth;* Sw. *bord,* a birth—from AS. *beran,* to bring forth; Icel. *burther,* a birth]: the act of coming into life; the being born; descent; family; condition in which one is born; origin; beginning; the thing produced. BIRTH-MARK, permanent mark on the skin at birth (see NÆVUS). BIRTHPLACE, place where born. BIRTHRIGHT, a right or privilege which any one is entitled to by birth. BIRTHDAY, the day on which a person is born; the anniversary of it. BIRTHWORT, n. *-wėrt,* a popular name for the *Aristolo'chĭăs,* from their supposed action on the uterus; a genus of plants, ord. *Aris'tolochĭā'cĕæ.*

BIRTH: the act of coming into life: it has important legal bearing in regard to the evidence of its legitimacy or illegitimacy. These qualities are variously determined by the regulations of different systems of jurisprudence. The ancient Roman law, as well as the modern Prussian and French codes, in particular, contain anxious provisions on the subject. In Eng. and Amer. law, no precise time is prescribed for fixing legitimacy or illegitimacy of birth. Forty weeks is considered, in practice, the more usual time for legitimate births; but a discretion to allow a longer time is exercised, when, in the opinion of medical men, or under the peculiar circumstances of the case, protracted gestation may be anticipated, or is likely to occur. See BASTARDY: HEIR: INHERITANCE. To make complete the B. of a living person, the whole body must

be brought forth, and detached from the mother, after which there must be life in the child, and independent circulation. The killing of a living child before B. is thus complete is murder, unless for the saving of the mother's life.

BIRTH, CONCEALMENT OF: an offense against the public economy, and punishable as a crime by the laws of most of the states. See PREGNANCY, CONCEALMENT OF.

BIRTHRIGHT: see INHERITANCE: PRIMOGENITURE.

BIRTHS, REGISTRATION OF, and of MARRIAGES and DEATHS: now regulated by law in many of the states, but with varying completeness and efficiency. The general form for registration of births comprises the time of birth, name, sex, and color (white or negro) of the child; the name, surname, maiden surname, etc., of the parents: this form must be filed with the proper official, by the physician or midwife in attendance. Similarly, the minister or other officiant at a marriage must file report of the place and time and of the name, age, nativity, occupation, etc. of the parties married. There are penalties for neglect. The details differ in different states.

BIRTHS, DEATHS, AND MARRIAGES: see VITAL STATISTICS.

BIRTH'WORT: see ARISTOLOCHIA.

BIRU, BEEROO, or BEROO, *bē-rô':* a kingdom of Sudan, w. Africa; lat. 15°–16° n., long. 5° 30′–7° 15′ w.; bounded on the n. by the Sahara, on the e. by the Niger, and has Bambarra on the s. Its w. limits are not clearly defined. The cap. town, Walet, is about 260 m. w.s.w. from Timbuctu.

BIS, in Music: denotes that the passage over which it is placed is to be played twice, or repeated. Such passages generally have a slur or bow over them, and the word 'bis' written below it, thus .
Bis

BISACCATE, a. *bī-săk'kāt* [L. *bis*, twice; *saccus*, a sack]: in *bot.*, having two little sacks or pouches.

BISACCIA, *be-sât'châ:* town of the Italian province of Avellino, on a hill about 30 m. e.n.e. of Avellino. Numerous ancient remains discovered here appear to fix B. as the site of the old *Romulea*, captured by the Romans in the third Samnite war. Pop. 6,500.

BISACQUINO, *be-sâk-kwē'no*, or BUSACCHINO, *bô-sâk-kē'no:* town of Sicily, about 27 m. s. of Palermo, with a population of 9,120, who carry on an extensive trade in grain and oil.

BIS'CAY, or VIZCAYA, *vēs-kī'â* or *vēth-kī'â:* most northerly of the Basque Provinces (q.v.); bounded n. by the Bay of Biscay; e. and s. by its sister-provinces, Guipuzcoa and Alava; and w. by Santander; 849 sq. m. Pop. (1905) 290,000.

BIS'CAY, Bay of: that portion of the Atlantic Ocean which sweeps in along the n. shores of the Spanish peninsula in an almost straight line from Cape Ortegal to St. Jean de Luz, at the w. foot of the Pyrenees, and thence curves n. along the w. shores of France to the island of Ouessant. Its extreme width is about 400 m., and its length about the same. The depth of water varies from 20 to 200 fathoms, being greatest along the n. shores of Spain. The whole of the s. coast is bold and rocky, in some places rising to a height of several hundred ft., and interspersed with short inlets, some of which form safe and commodious harbors. From the mouth of the Adour to the Gironde, the shore presents a totally different aspect, being low and sandy, with numerous lagoons, the embouchures of these two rivers forming the only harbors. For 200 m. n. the coast is still low, but marshy instead of sandy; and from the peninsula of Quiberon northward to Ouessant, it is moderately elevated and rocky in some places, with several good harbors. The rivers falling into the Bay of Biscay on the Spanish shores are unimportant, none of them having a course of more than 30 or 40 m. On the coast of France, it receives, through the rivers Loire, Charente, Gironde, and Adour, the waters of half the surface of the whole country. Its chief ports are Gihon, Santander, Bilbao, San Sebastian, and Passages, in Spain; and Bayonne, Bordeaux, Rochefort, La Rochelle, and Nantes, in France. Its chief islands—all situated n. of the Gironde—are Belleisle, Ré, and Oléron. Navigation is rendered difficult and dangerous by the prevalence of n.w. winds (which drive in through the wide mouth of the bay large volumes of water from the Atlantic, to be again thrown back from the long regular line of coast toward the centre, thus causing great commotion, and high, short, broken waves), and by the existence of a current—called Rennel's Current—which sweeps in from the ocean round the n. coast of Spain, along the w. and n.w. coasts of France, then shooting across the British Channel, brushes the Scilly Isles, and after approaching the coast of Ireland, turns w. and s., till it joins the n. African current.

BISCEGLIE, *be-shĕl'yâ* or *be-shāl'yâ:* seaport town of Italy, on the Adriatic, province of Bari, in the former kingdom of Naples; 21 m. n.w. by w. from Bari. It is built on a rocky promontory, defended by strong fortifications. The port admits only vessels of small burden. B. is a bishop's seat, and has a cathedral, besides two collegiate and several other churches, convents, a seminary, a hospital, etc. During the Crusades, B. was famous for its hospital, founded by Bohemond, for pilgrims from the Holy Land, of which some ruins remain. Pop. 30,900.

BISCHOFF, *bish'off,* Theodore Ludwig Wilhelm; 1807–82, Dec. 5; b. Hanover, Germany; anatomist and physiologist. He became prof. of anatomy in Heidelberg, 1836. From Heidelberg he removed, 1843, to the Univ.

of Giessen, and 1854, to that of Munich. B. greatly promoted the science of embryology, which he made his life's study. His *Entwickelungsgeschichte des Kaninchen-eies* (1843) received the prize from the Berlin Acad. Of his numerous writings in Müller's *Archiv*, and published separately, may be singled out the *Beweis der von der Begattung unabhangigen periodischen Reifung und Los-lösung der Eier der Saugethiere und der Menschen* (Giess. 1844), in which he establishes the important doctrine of the periodic ripening and detachment of the ova in mammalia and man, independently of generation. He demonstrated the impossibility of spotaneous generation, and discussed the development, from the egg of various animals. Other works are on the differences in the formation of the skull in the chimpanzee, gorilla, and orang-outang (1867); *Die Grosshirnwindungen des Menschen* (1868); and *Beiträge zur Anatomie des Hylobates Leuciscus* (1870). B. was ennobled in 1871.

BISCUIT, *bĭs-kĭt* [F. *biscuit*—from L. *bis*, twice; F. *cuit*, done or baked—from L. *coctus*, cooked or dressed]: bread baked hard for keeping (see BISCUITS); porcelain and other earthenware after the first firing, and before it has received the glaze and embellishments. See PORCELAIN and POTTERY.

BIS'CUITS [Fr. twice-baked]: known in the United States as CRACKERS ('Biscuit' in this country meaning cakes of soft raised bread): small, flat bread, rendered dry and hard by baking, in order to their long preservation. They are divided into two classes—*unfermented* and *fermented*. *Unfermented* or *unleavened* B., generally known as *common sea-biscuit* or *ship-bread*, are made of wheaten flour (retaining some of the bran), water, and common salt. The materials are kneaded together either by manual labor, or as now almost universally by aid of machinery—by introducing the materials into a long trough or box, with a central shaft, to which a series of knives is attached, and which is made to revolve rapidly by machinery. The mass of dough so obtained is then kneaded and thinned out into a sheet the proper thickness of the B., by being passed and repassed between heavy rollers. This sheet being placed below a roller with knife-edge shapes, is readily cut into hexagonal (six-sided) or round pieces of dough of the required size of the biscuits. The indentation of the slabs of dough, in the case of the hexagonal B., is not complete, so that all the B. cut out of each slab remain slightly adhering together. These slabs of B. are then introduced into an oven for about 15 minutes, and are placed in a warm room for two or three days, to become thoroughly dry. The more modern oven is open at both ends, and the B., being placed in a framework, are drawn by chains through the oven. So rapidly is this operation conducted, that about 2,000 lbs. weight of B. are passed through one of these ovens every day of ten hours.

Captains' B. are prepared from wheaten-flour, water, with common salt, and butter, with an occasional small dose of yeast to cause partial fermentation. Milk is also sometimes employed. *Water* or *hard B.* are made of flour, water, with variable quantities of butter, eggs, spices, and sugar. *Soft B.* contain increased quantities of butter and sugar. *Yeast B.* are those the dough of which is mixed with a small quantity of yeast, yielding more porous biscuits. *Buttered B.* are made with much butter and a little yeast. Numerous other varieties of B. (crackers in the United States) are produced by variations in the materials or in the process of baking.

BISCUTATE, a. *bī-skū'tāt* [L. *bis, scutum,* a buckler]: in *bot.,* resembling two bucklers placed side by side.

BISE, n. *bēz* [F.]: a cold north wind which prevails on the northern coasts of the Mediterranean (see MISTRAL); the cold mountain-wind of the Alps.

BISECT, v. *bī-sĕkt'* [*L. bis,* twice; *sectus,* cut]: to cut or divide into two equal parts. BISEC'TING, imp. BISEC'TED, pp. BISEC'TION, n. *-sĕk'shŭn,* the act of cutting into two equal parts. BISEG'MENT, n. the exact half of a line.

BISEGL'IÉ: see BISCEGLIE.

BI-SEPTATE, a. *bī-sĕp'tāt* [*L. bis,* twice; *septum,* a fence, an inclosure]: having two partitions.

BISERIAL, a. *bī-sē'rĭ-ăl* [L. *bis,* twice; *serĭēs,* an order or row]: arranged in a double series or in two rows.

BI-SERRATE, a. *bī-sĕr'rāt* [L. *bis,* twice; *serra,* a saw]: being doubly marked or notched like the teeth of a saw, as in certain leaves; having notches which themselves bear smaller notches.

BI-SETOUS, a. *bī-sē'tŭs* [L. *bis, seta,* a bristle]: having two bristles.

BI-SEXUAL, a. *bī-sĕks'ū-ăl* [L. *bis,* twice; *sexus,* male or female]: of both sexes; hermaphrodite.

BISHOP, n. *bĭsh'ŏp* [AS. *bisceop*—from L. *episcŏpus;* Gr. *episkŏpos,* an overseer]: a prelate; a clergyman consecrated for the government and oversight of the clergy within a district called a diocese. BISH'OPRIC, n. *-rĭk,* or BISH'OPDOM, a diocese; the office and jurisdiction of a bishop. BISHOP'S-WEED, or GOUT-WEED, the *Ægopŏd'ĭŭm podagrārĭă,* ord. *Umbellif'ĕræ.*

BISHOP (Sax. *biscop,* from Gr. *episcopos,* a superintendent), in the Greek, Latin, and Angelican churches, the title given to those who are of the highest order of the priesthood, to the successors of the 12 apostles, in distinction from the priests who are the successors of the 72 disciples; in the Methodist Episcopal and Moravian churches, and in the Protestant churches of Sweden, Norway, and Denmark, it is the title given to the highest officers in the ministry, who are not, however, regarded as a distinct order; in Germany the office is hardly more

than titular, and is conferred upon princes as well as ecclesiastics. The name was borrowed by the first Christians from the languages of Greece and Rome, in which it designated a civil magistrate. Thus, Cicero was at one time *episcopus oræ campaniæ.* In the New Testament, the words bishop and presbyter, or priest, are sometimes interchanged, as in Acts xx. 17, 28, and St. John, in his last two epistles, adopts the title of priest. Yet as maintained by Roman Catholic writers, it does not follow because the names priest and bishop were then applied indistinctly, that there existed no distinction between the episcopate and the priesthood. 'There might have been confusion in the names,' says St. Thomas, 'but not in the character.' The identity of the original signification of the words 'presbyter' and 'bishop' was acknowledged by the Christian fathers St. Jerome and St. Augustine in the 5th century, and even by Pope Urban II. at the end of the 11th century, and it is not denied by many Episcopalians even at the present day. By the Council of Trent, however, the doctrine which placed presbyters and bishops originally on a footing of perfect equality in the early Church was declared as a heresy, the object of which was to deny to the bishops of the Church the priority of rank which they claimed.

Those who adhere to the Episcopalian form of Church government, and at the same time admit the original identity of presbyters and bishops, differ from the Presbyterians in their theory of the origin of the episcopal authority. The Episcopalians maintain that even before the words had a separate meaning attached to them the distinction between bishops and subordinate pastors existed in fact, and was a regular ecclesiastical institution, those who held a peculiar authority over others being appointed originally by the apostles. The Presbyterians, on the other hand, believe that the authority that was undoubtedly conceded to certain of the 'bishops' or 'presbyters' when they met to consider the affairs of the Church, was not due to any formal appointment, but merely to the mutual agreement of the assembled presbyters, and that this distinction was no more than a mark of respect paid to some member who was venerable by his age or distinguished by his piety. But, whichever of these two theories may be correct, there is no doubt of the fact that at a comparatively early period in the history of the Church a position of authority was acquired by the pastors of the Christian communities belonging to certain places, and that these came to be distinguished from the others by the name of bishops. The growth of this authority was favored by the doctrine which we find stated in the beginning of the 2d century with regard to the priestly dignity being a peculiarly divine institution. The more this doctrine was affirmed the higher grew the claims of the bishops. Ignatius of Antioch, who died about 115, had already declared every bishop to be a representative of Christ, in which we have the

statement of the doctrine of the apostolic succession, that is to say, the doctrine of the transmission of the ministerial authority in uninterrupted succession from Christ to the apostles, and through these from one bishop to another. By the foundation of new churches in the larger towns which were affiliated to the original churches, and by the dependence of the presbyters in the country districts upon those having urban charges, the authority of the bishops came to be gradually extended over greater or less dioceses; and at the same time the bishops began to reserve to themselves peculiar privileges. As the early Church advanced and increased in growth, the offices and jurisdiction of the bishops developed correspondingly and by the 2d century their duties are clearly marked off from the subordinate clergy.

While this then was the position of the bishops in relation to the presbyters, they at first considered themselves as standing on a footing of equality in relation to each other. But as certain of the presbyters in their assemblies had acquired a priority of rank over the others, it gradually came about in the same way that the bishops of the chief cities (Jerusalem, Antioch, Corinth, Alexandria, Constantinople, Rome) obtained a similar precedence among the bishops, and received the title of metropolitan bishops; and very early in the history of Christianity we find the Bishop of Rome claiming to be the head of the Church as the true successor of Peter, whom Christ himself had pronounced to be the rock on which he would build his Church. Roman Catholic writers found this supremacy of Peter upon the evidence of Scriptures, upon the *a priori* argument of the necessity of one supreme head both in the matter of government and the preservation of the integrity of doctrine, and upon the testimony of early ecclesiastical writers, who witness to the tradition of the universal supremacy of the Roman see.

After the transfer of the capital of the Roman empire to Constantinople, this city rapidly rose to ecclesiastical importance and became a metropolitan see. Its bishops made claim to be the first see in the Christian world after Rome on account of the imperial dignity of the city, but this assumption was stoutly resisted by the apostolic sees of the East, whom Rome always sustained against Constantinople's claim. After the Greek schism, Constantinople assumed the primacy of the Greek Church.

The practice of solemnly investing bishops with their offices dates from the 7th century. Already in the 5th century the Popes had begun to send to the newly elected metropolitan bishops (now called archbishops) the pallium, a kind of official mantle worn by archbishops, as a token of their sanction of the choice. Two centuries later it became the custom to consecrate bishops by investing them with the ring and crosier, the former as a token of marriage with the Church, the latter as a symbol of the pastoral office. Since this investiture was what gave

validity to the election of the bishops, it became the source of long-continued contests between the Popes and the temporal sovereigns in the Middle Ages. The influential position which the bishops occupied in the state caused the temporal rulers to be desirous of keeping the right of investiture in their own hands, while the Popes with equal determination claimed the right for themselves. The contest was most bitter between the Popes and the emperors of the Romans, as they were called. It began in the 11th century, but was not settled till 1122, when it was agreed in the concordat of Worms between Pope Calixtus II. and the Emperor Henry V. that the election of bishops should take place according to the laws of the Church under the direction of the emperor, and that the spiritual investiture (with ring and crosier) should remain in the hands of the Pope, while the bishops were to be invested with the temporal rights of their office by the emperor. This is still the fundamental law of the Roman Catholic Church with regard to investiture. The election to a bishopric is for the most part in the hands of the dean and chapter of the cathedral of the diocese; but in some cases it is a right of the territorial sovereign. In any case papal confirmation is requisite before the appointment is complete. Roman Catholic bishops in England are appointed exclusively by the Pope.

When the system of the ecclesiastical rule was matured, the almost absolute authority which they exercised over the clergy of their dioceses; their intervention in the secular concerns of the governments, to which they soon rendered themselves necessary by their superior information and their elevated rank; the administration of the Church revenues; and their extensive ecclesiastical as well as criminal jurisdiction, drew them into the vortex of secular affairs, sometimes at spiritual expense. Still it continued to be the bishop's duty to teach and preach in his own diocese, to watch over purity of doctrine, to see that the people were provided with the sacraments, to visit the churches in his diocese, etc. The most distinctive functions of their spiritual office remained as they still are, the ordination of the clergy, the consecration of other bishops, the confirmation of youth, the consecration of churches, etc. In the Middle Ages they attached to themselves subordinate or assistant bishops called suffragans or coadjutors, who often had intrusted to them the performance of these functions which more especially concerned the Church. The episcopal office being such as we have described it, the nobility, and even the sons of princes and kings, strove to obtain a dignity which was as honorable as it was profitable, and was not deemed incompatible with festivities and luxurious enjoyments. The splendid establishments which they were able to maintain from the large revenues derived chiefly from rich donations to their churches by pious devotees, gave, to the bishops of Germany particularly,

a high degree of dignity. They became princes of the empire, and their influence on public affairs was highly important.

The Reformation lessened the number of bishops, and though in some of the Protestant countries of the north of Europe the higher clergy have retained the title of bishop, yet they have lost the greater part of their former revenues and privileges, though in neither of these particulars have those of England any reason to complain. The English Church has left to its bishops more authority than the rest, and this is one reason why it bears the name of episcopal. To them belong ordination, confirmation, the consecration of churches, the licensing of curates, and institution to benefices. They receive their appointment from the Crown. In Prussia, though the majority of the population are Protestants, the Roman Catholic bishops receive an annual allowance from the state. Some bishops in the Roman Catholic Church are nominally in charge of dioceses in countries which do not acknowledge the Christian faith. The dioceses of such bishops are said to lie *in partibus infidelium* (in parts belonging to unbelievers), and they are chiefly those that were wrested from the Christian Church by the Mohammedans.

The appointment of bishops was one of the grievances of the American colonists; few things more exasperated them than the scheme of appointing and sending out a bishop from England. It is said that there was a project of making Dean Swift bishop of the American colonies. In 1771, at the instance of the clergy of New York and New Jersey, the plan was again urged. The clergy of Virginia generally assented, but throughout America the dissenters and the Episcopal laity opposed. After the Revolution the case was altered. The first Episcopal bishop, Samuel Seabury, of Connecticut, was consecrated by Scotch non-juring bishops in 1784. The Methodists began to use the term bishop in 1787. The first Roman Catholic bishop John Carroll, of Baltimore, was consecrated in 1790. See ARCHBISHOP; APOSTOLIC SUCCESSION.

Bibliography.—Baur, *Christianity and the Church in the First Three Centuries;* Dollinger, *The First Age of the Church;* Hatch, *Organization of the Early Christian Churches;* Lightfoot, *St. Paul's Epistle to the Philippians;* Moberly, *Ministerial Priesthood.*

BISHOP, Sir HENRY ROWLEY: 1786, Nov. 18—1855, Apr. 30; b. London: musical composer. His principal musical instructor was Signor Francesco Bianchi. In 1806, B. was appointed composer of ballet music at the opera. His most popular operatic entertainments were *Guy Mannering; The Slave; The Miller and his Men; Maid Marian; Native Land; The Virgin of the Sun;* etc. —all remarkable for their long flowing melodies, animated style, and true musical power. From 1810 to 1824, he was director of the music at Covent Garden Theatre. One of the first directors of the Philharmonic Soc., he

for many years conducted the concerts of ancient music. He arranged several volumes of the *National Melodies*, and succeeded Sir John Stevenson as arranger of the airs selected by Moore for his *Melodies*. In 1841, Nov., he was elected Reid prof. of music in the Univ. of Edinburgh. In 1842 he was knighted. In 1843, Dec., he resigned his Edinburgh chair, and in 1848, Feb., was elected prof. of music in the Univ. of Oxford.

BISHOP, Isabella L. (Bird): b. Boroughbridge Hall, Yorkshire, 1832, Oct. 15; d. 1904, Oct. 7. She began to travel at the age of 22 and made her first trip abroad in 1855, when she visited Prince Edward's Island and the United States, and afterward circumnavigated the globe three times. In recent years she spent much time in Japan, and in 1894–5 made her third trip to Korea. She was in Seoul when the war broke out, 1894, and was the first person whose war correspondence reached London. She was a Fellow of the Royal Geographical Society. In 1892 she was elected the first lady Fellow of the Royal Geographical Society and in 1901 rode 1,000 miles in Morocco. She was married in 1881 to John Bishop, who died five years later. Her publications include: *The English Woman in America* (1856); *Six Months in the Sandwich Islands* (1873); *The Hawaiian Archipelago* (1875); *A Lady's Life in the Rocky Mountains* (1874); *Unbeaten Tracks in Japan* (1880); *Journeys in Persia and Kurdistan* (1892); *Among the Tibetans* (1894); *Korea and Her Neighbors* (1898); *The Yangtze Valley and Beyond* (1899); *Pictures from China* (1900).

BISHOP, John Remsen, American educator; b. New Brunswick, N. J., 1860, Sept. 17. He was graduated at Harvard University in 1882; taught Greek and English at St. Paul's School, Concord, N. H., in 1882–3; was principal of the Princeton Preparatory School in 1884–7; instructor of Greek and Latin at Hughes High School, Cincinnati, in 1888–95; principal of the Walnut Hills High School, Cincinnati, 1895-1904; and since 1904 principal of the Eastern High School, Detroit. He is the author of *Virgil's Georgics Edited for Sight Reading*, and of numerous papers and articles on pedagogical subjects; editor *Cicero's Orations*, and a member of the American Social Science Association.

BISHOP, Louis Faugeres, American physician: b. New Brunswick, N. J., 1864, March 14. He graduated at Rutgers College in 1885, and at the New York College of Physicians and Surgeons in 1889. He was resident physician of St. Luke's Hospital, New York, in 1889–92, and secretary of the New York Academy of Medicine and chairman of its Section of Medicine in 1900. His publications include *Theory and Treatment of Rheumatism*; *Diagnosis and Treatment of Gout; Important Points in the Treatment of Pneumonia*; *Blood Pressure* (1904); etc.

BISHOP, Seth Scott, American physician: b. Fond du Lac, Wis., 1852, Feb. 7. He graduated at the North-

western University in 1876. He began practice in Chicago and in 1900 was professor of otology in the Chicago Post-Graduate Medical School and Hospital; Professor of diseases of the nose, throat, and ear in the Illinois Medical College; and surgeon to the Illinois Hospital and the Post-Graduate Hospital. He was also consulting surgeon to the Mary Thompson Hospital, the Illinois Masonic Orphan's Home in Chicago, and the Silver Cross Hospital in Joliet. He was a member of the International Medical Congress, the Pan-American Medical Congress, the American Medical Association, etc. He has written *Diseases of the Ear, Nose, and Throat, and Their Accessory Cavities*; *The Ear and its Diseases*, besides many monographs and is one of the editors of *The Laryngoscope*.

BISHOP, William Henry, American novelist: b. Hartford, Conn. 1847, Jan. 7. He was graduated at Yale in 1867 and in 1893 became professor of Spanish language and literature in its scientific school (Sheffield), resigning in February, 1902, to spend several years in travel in Spain and elsewhere, in preparation for a list of new works in the fields of travel and fiction. He became United States consul at Genoa, Italy, in 1903, Feb., and was transferred to Palermo, Italy, 1905, Jan. 1. He is the author of several novels, including *Detmold* (1879); *The House of a Merchant Prince* (1882); *A Pound of Cure; A Story of Monte Carlo* (1894); *Fish and Men in the Maine Islands; A House Hunter in Europe; Writing to Rosina*, a story; *The Golden Justice; Choy Susan and Other Stories; The Brown-Stone Boy and Other Queer People; Sergeant Von* (1889); *The Yellow Snake*, reissued as *Tons of Treasure* (1902); *The Faience Violin*, translation (1893); and many similar works; also a book of travel, *Old Mexico and Her Lost Provinces*.

BISMARCK, *bĭz'mârk:* city, cap. of North Dakota and of Burleigh co., on the Missouri river, and the Northern Pacific railroad, 196 m. w. of Fargo. A fine steel bridge, built at a cost of $1,500,000, spans the river here, and among prominent buildings are the state capitol, courthouse, city hall, federal buildings, penitentiary, hospitals, school houses, and state library. The city is the commercial center of a productive agricultural and coal-yielding section, with a large river trade supplying Indian agencies and military posts. Flouring mills, grain elevators, a brewery, etc., represent active industries, and the city has modern water-works and electric lighting. A winter station of the Lewis and Clark Expedition in 1804–05. B. settled in 1873, became the territorial cap. 1883 and the state cap. in 1889. Pop. (1890) 2,186; (1900) 3,319; (1910) 5,443.

BISMARCK-SCHÖNHAUSEN, *bēs'mârk-shön'how-zĕn*, Herbert Nikolaus, Prince von: German statesman; 1849, Dec. 28—1904, Sept. 18; b. Berlin, d. Friedrichsruhe; son of Otto Edward Leopold, Prince von Bismarck-Schönhausen. He was educated for a diplomatic career,

saw active service in the Franco-German war, was attached to various European embassies, in 1884 became ambassador at The Hague, and secreatry of state in 1886. He retired from political service when his father resigned in 1890, but in 1893 and 1898 was elected Conservative member of the Reichstag. As *Politische Reden*, his speeches were published in 1899.

BISMARCK, Prince (Otto Edward Leopold von Bismarck-Schönhausen, *bĭs'mârk-shön'how-zen*): German statesman: 1815, Apr. 1—1898, July 30; b. Schönhausen, Prussia. He was educated at the universities of Göttingen, Berlin, and Greifswald; studied law; was appointed lieut. in the Landwehr; became a member of the diet of Saxony 1846, and of the general diet 1847; and began his diplomatic career 1851, when he was appointed Prussian sec. of legation at Frankfort. In the following year he was sent to Vienna, and soon manifested a political hostility to Austria, and a desire to create a large political importance for Prussia. In 1858 a pamphlet was published and credited to his authorship, in which, under the title *Prussia and the Italian Question*, an antagonism between Austria and Prussia was shown, and an alliance between France, Prussia, and Russia urged. A year later he was appointed ambassador to Russia. He held the office till 1862, gained the confidence of the czar, and received many evidences of imperial favor. Early in 1862 the king sent him on a special mission to France, where he was cordially received by Napoleon III., who conferred on him the grand cross of the Legion of Honor. In Sept. following he was appointed minister of the king's house and of foreign affairs. Within a month he manifested the 'iron will' that characterized all his future public acts, and at the same time gave the strongest evidence of a knowledge of the king's confidence in him. He instituted a reactionary policy, and when the chamber of deputies rejected the budget after the upper house had adopted it, he dissolved the former in the king's name, Oct. and in the acrimonious debate announced that he would enforce his measures without the sanction of the deputies. The newspapers protested against his arbitrary act, and were severely punished, and a large number of prominent officials who had fearlessly criticised the new policy of the govt. were made to feel that the man at the head of affairs was not to be opposed with impunity. In 1863, Jan., the deputies adopted an address to the king, in which they accused B. of having violated the constitution. To this the minister made an energetic protest. On Feb. 8, the king made a secret treaty with Russia. When the deputies learned of it, through the Polish difficulties, they adopted a vote of censure against the ministry by a large majority. No opposition, however, swerved B. from his policy; and it seems altogether probable that the acquiescence of the king in the arbitrary development of B.'s policy, at this time, was based on an assurance

from the minister that his ultimate object was the unification of all the German states. In 1864, the war against Denmark, in which Austria had co-operated with Prussia, led to a revelation of this part of B.'s plan. The German states became enthusiastic, and B. speedily emerged from the general disfavor. But he believed that the union he meditated was impossible under existing relations with Austria. He made an alliance with Italy, determined to exclude Austria from Germany, caused Prussia to secede from the confederation, and made an aggressive war on Austria 1866. Austria and her allies were defeated in a few weeks' campaign, June, and by the preliminary treaty of peace Austria agreed to retire from the German confederation. The immediate results of this movement were the annexation of Hanover, Electoral Hesse, Holstein, and other states to Prussia; the garrisoning of the free town of Frankfort by Prussian troops, despite the protests of its citizens; the conclusion of treaties of peace and alliance between Prussia and Bavaria, Baden, and Würtemberg on the condition that in the event of war the king of Prussia should command the armies of the allied states, and the formation of the N. German Confederation, comprising 22 states with an aggregate pop. of 29,000,000. For his share in bringing about these important results, B. was created a count, presented by the king with a valuable estate in Luxembourg, and appointed chancellor of the new confederation and pres. of its federal council.

By this time France had become alarmed at the rapid creation of this great milit. power on her border. When in 1870, July, it was announced that Gen. Prim, through a deputation, had offered the crown of Spain to Prince Leopold of Hohenzollern, French statesman declared that France would never permit a Prussian prince to occupy the Spanish throne, and the French govt. through Count Benedetti demanded an explanation of the Prussian cabinet. The candidacy of the Hohenzollern prince was terminated by the king, but in spite of this fact, France declared war against Prussia, and within a few days the armies of both nations began moving (see FRANCO-GERMAN WAR). Now B.'s firm and dictatorial policy began to bear vital fruit. The allied German states threw their armies into the field, and Bavaria, Baden, and Würtemberg in particular gave most timely and effective aid to Prussia. B. accompanied King Wilhelm to the field, and remained with him to the close of the war. With the surrender of Napoleon III. and the occupation of Paris by the German troops, B. took the final step toward accomplishing this object. He dictated the terms of peace, which included the surrender of the French provinces of Alsace and Lorraine to Prussia; and 1871, Jan. 18, witnessed the fulfilment of his plans, when in the palace of the French kings at Versailles King Wilhelm was hailed and crowned emperor of united Germany. For the consummation of the consolidated empire, he was

raised to the rank of prince, and appointed chancellor of the German empire by his grateful sovereign.

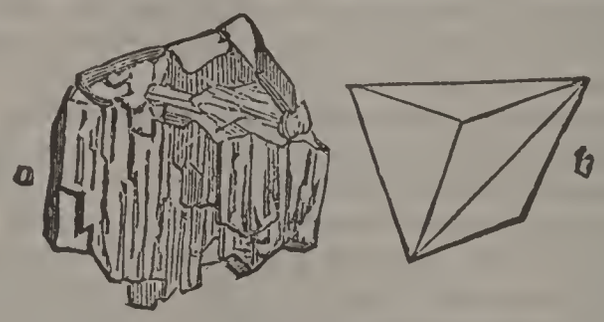
As chancellor of the empire, he manifested the same aggressiveness and independence as when he first dissolved the Prussian chamber of deputies. He first applied himself to the settlement of the ultramontane question, and his acts gave great offense to the Rom. Cath. party in Germany. He demanded that the Rom. Cath. Church should not encroach upon the rights of the state, and before the first struggle ended many hundred Jesuits were expelled from Germany, and several Rom. Cath. bishops were imprisoned for refusing obediance to the new ecclesiastical laws. He resigned the presidency of the state ministry 1872, Dec., though he continued to confer unofficially with the emperor on all matters of domestic and foreign importance, and was decorated with the order of the Black Eagle set in diamonds, by the emperor. In 1873, Oct., he was again appointed Prussian premier; 1874 he caused the arrest and trial of Count von Arnim on charges of having removed documents from the archives of the German embassy in Paris; and 1878 he presided over the celebrated 'Congress of Berlin,' called by the great powers to discuss and define the provisions of the treaty of San Stefano. Subsequently he aimed to found a German colonial empire; to counteract the work and influence of the social democrats by establishing a system of state socialism, with national life insurance and other features; to strengthen the Austro-German alliance; and to prevent Russia from forming any alliance with France that would be detrimental to the interests of Germany. A modification of the strict ecclesiastical laws led to a better feeling between Germany and the Vatican, and prompted the pope to confer on B. the decoration of the order of Christ 1886.

On the death of Emperor Wilhelm I. 1888, Mar. 8, and the succession of the suffering 'Unser Fritz,' the eyes of the world were directed toward B. more keenly than they had been since the war with France. The crown prince and his wife were known to be imbued with a liberalism diametrically opposed to the spirit of B.'s public career. As was generally expected, Friedrich Wilhelm promised his people a reign in accordance with the constitution and liberal reforms. After this, it was thought B. would resign his public offices, as there could be little sympathy between him and his new sovereign. But the death of Friedrich Wilhelm III. 1888, June 15, interposed, and B. remained virtually the political director of Germany. With the accession of Wilhelm II., however, B. found an enthusiastic, chivalric, impulsive youth, ambitious to assume the personal control of all matters relating to the empire. Harmony was impossible. When the young emperor announced to B. his determination to exercise a general and absolute control of public affairs, and declared that the rights B. claimed as chancellor and pres. of the ministry under the cabinet order of 1852, Sep. 8,

were an encroachment on the prerogatives of the sovereign, the creator of the united German empire resigned his offices 1890, Mar. 17, and five days afterward left Berlin. The emperor accepted his resignation, created him duke of Lauenburg (which title B. declined), and appointed Gen. George Leo von Caprivi (see CAPRIVI) his successor. B. began, 1892, his criticisms of the German foreign policy, in public speeches and 'interviews.' When the accredited organs of the govt. threatened him with legal prosecution, B. replied with defiance, exhorting the German people to 'produce a strong parliamentary majority, so as to prevent absolutism and bureaucracy.' In 1894 a happy reconciliation was effected by B.'s acceptance of the emperor's invitation to visit him in Berlin, where B. was received with utmost honors by the emperor and the people. He died in his 73d year from general debility at Friedrichsruh, Prussia, July 30, 1898.

BISMILLAH, int. *bĭs-mĭl'la* [Ar. In the name of God]: an exclamation common among the Mohammedans.

BISMUTH, n. *bĭz'mŭth* [Ger. *wiszmuth*—said to be from *weisz*, white; *muth*, lively mood: F. *bismuth*]: one of the elementary bodies; a hard brittle reddish-white metal, used in making pewter, printer's types, etc., non-malleable, but easily fusible. BISMUTH'INITE, Bi_2S_3, n. *-ĭn-īt*, bismuth-sulphide of a grayish-tin color. BIS'MUTHITE, n. *-īt*, or BIS'MUTITE, n. *-mū-tīt*, a yellow carbonate of bismuth, or of a white or dull mountain-green. BIS'MUTHAL, a. *-al*, and BIS'MUTHIC, a. *-ĭk*, of or from bismuth. BISMUTH-BLENDE, *-b'ĕnd*, a bismuth-silicat



Bismuth:

a, example of native bismuth from Redruth, in Cornwall: *b*, crystal of bismuth.

with a little iron phosphate; same as Eulytite.—BISMUTH (sym. Bi, at. wt. 208.5, sp. gr. 9.823) is a highly crystalline, very brittle metal, of grayish-white color with distinct reddish tinge, melting at 270°C=518° F., and expanding in the act of solidification. B. volatilizes at a high temperature; is the most diamagnetic of all known bodies; is little oxidized by air, but burns with bluish flame, when strongly heated. Nitric acid somewhat diluted dissolves it freely. A mixture of B. 8 parts, lead 5, and tin 3, known as *fusible metal*, is used for taking impressions from dies and for other purposes; its fusion temperature is below 212°F. Spoons made of this alloy are em-

ployed in a familiar conjuring trick, in which they are seen to melt away when put in boiling water. The principal sources of B. are the smalt-works of Saxony, where ores containing B. and cobalt are worked. The ores are roasted, and afterward smelted in the pots of the smalt furnaces, with addition of iron, carbon, and slag. Two layers are thus obtained, the lower consisting of nearly pure B., which, because of its low melting-point, can be drawn off in the liquid state after the upper layer of cobalt-speiss has solidified. Of *oxides* of B. the most important is the trioxide, Bi_2O_3, a straw-yellow powder obtained by gently igniting the neutral or basic nitrate: it is used in porcelain manufacture for fixing the gilding and for increasing the fusibility of fluxes, at the same time neutralizing the colors which are often communicated by them. *Trichloride of B.* (bismuthous chloride), $BiCl_3$, is formed when B. is heated in a current of chlorine gas: it passes over as a white, easily fusible substance, which readily attracts moisture from air, being converted into a crystallized hydrate. *Normal Nitrate of B.*, $Bi(NO_3)_3$, $5H_2O$, forms large transparent colorless crystals which are decomposed by water, yielding an acid solution and a brilliant white crystalline powder, hydroxy-nitrate of B., $Bi(NO_3)(OH)_2$. An insoluble basic nitrate containing rather a larger proportion of B. oxide, is the substance sold under the names 'Pearl White,' 'Pearl Powder,' 'Blanc d'Espagne,' etc.: it is said to be injurious to the skin, rendering it yellow and leather-like. Among medicinal preparations of B. are the Subnitrate, the Subcarbonate, and the Salicylate. Of these the subnitrate is a heavy smooth white powder, only slightly soluble when taken internally, and for this reason is used extensively in gastric and intestinal troubles, where it acts in a purely mechanical manner, coating over the inflamed mucous membrane, and so preventing and allaying irritation. It is also feebly astringent, and tends to diminish secretion. The subcarbonate is very similar in its action to the subnitrate, but is more soluble. The salicylate of B. combines the antiseptic action of salicylic acid with the soothing effect of B., and therefore is a most useful preparation in diarrhea due to fermentation of the contents of the intestinal tract.

BISNOW, n. *bi-snō:* a member of a sect of Banyans (after whom the banyan-tree was named and which they consider sacred).* The Bisnows recognize but one god whom they call Ram-Ram (Most High), and who, according to their belief, created all things by his own power, without external agents. They constitute one of the four principal sects of the Banyans. Their food consists of fruits, vegetables, milk diet, etc.; and they abstain

*See also Sir T. Herbert's *A Relation of some Years travaile, begunne anno* 1626; *into Afrique and the greater Asia, especially the Territories of the Persian Monarchie and some parts of the Orientall Indies, and Iles adjacent*, London, Printed by William Stansly, and Jacob Bloom, 1634.

from meat and in general from everything that has life, pushing their scruples on this subject even to the point of using for fuel cow-dung dried in the sun and mixed with dry herbs, lest by using wood they might cause the death of some worms which might be imbedded in it. This respect for every living being is occasioned by their belief that human souls in their wanderings often pass into and inhabit the bodies of inferior animals: see TRANSMIGRATION. They solemnize the worship of their god, Ram-Ram, by songs and dances, with an accompaniment of many diverse instruments, drums, flutes, etc. In this sect the widows are not obliged to burn themselves with the bodies of their deceased husbands, but must preserve a perpetual widowhood.

BISON, n. *bī'zŏn* [F. *bison*—from L. or Gr. *bison*]: a kind of wild ox, with short black rounded horns, and a large fleshy hunch on the shoulders. The ancients gave the name to an animal of the same genus with the ox (q.v.) called the B., or the European B. (*Bos Bison* of some naturalists, *Bos Urus* of others, though properly the Urus (q.v.) or Aurochs is a distinct animal). The B. differs from all varieties of the common ox, in the arched line of the back, which rises in a sudden elevation behind the neck; the hump which is formed not consisting, however, of mere fat, but in great part of the very thick and strong muscles which support the large head. It is remarkable for strength in the fore-parts, and trees of five or six inches in diameter cannot withstand the thrusts of old bulls. It is capable of repelling all the attacks of the wolf or bear, rushing upon, overthrowing, and then trampling an adversary. Its horns are short, tapering, very distant, spreading, a little curved inwards at the point. They are affixed not at the extremities of the most elevated salient line of the head, as in the ox, but considerably in front of it. The figure of the forehead differs also from that of the ox in its greater breadth, and in its convex profile. Another important anatomical difference is in the number of ribs, of which the B. has fourteen pair, while the ox has only thirteen; and the vertebræ of the tail are fewer, being only nineteen instead of twenty-one. The hair of the forehead is long and shaggy; that under the chin and on the breast forms a sort of beard; and in winter the neck, hump, and shoulders are covered with long wooly hair, of a dusky brown color, intermingled with a short, soft fawn-colored fur. This long hair is gradually cast in summer. The legs, back, and hinder-parts are covered with short dark-brown hair. The tail terminates in a large tuft. The females are not so large as the males, nor do they exhibit the same shagginess of the fore-parts. The food of the B. consists of grass and brushwood, and the leaves and bark of young trees. It does not attain its full stature till after its sixth year, and lives about thirty or forty years. The period of gestation appears to be the same with that of the ox.—The B. is generally very shy, and can

be approached only from the leeward, its smell being very acute. It is easily provoked, and is not approached without danger. It runs very swiftly, although it cannot long continue its flight, galloping with its head very low, so that the hoofs are raised higher than the head.

There is no historical evidence that the B. ever existed in Britain; but remains of this, or of a very closely allied species, are found in pliocene fresh-water beds in several parts of England, as well as on the continent of Europe. The size of these B. bones is, however, so great as of itself to cause a doubt of the identity of the species, and the horns are longer in proportion. The fossil B. has been called *Bison priscus; Bison* being by some naturalists separated as a genus from *Bos*, upon the ground chiefly of the osteological differences in the head.

The American B. (*Bos Americanus* of some naturalists, *B. Bison* of others) is interesting as the only species of the ox indigenous to Amer., though the *Bovidæ* include the Amer. antelope, Rocky Mt. sheep and goat and the musk-sheep or 'musk-ox.' The B. is called *Buffalo* by the Anglo-Americans, although it is very different from the Buffaloes (q.v.) of the old world. Until within a few years it was found in vast numbers in the great prairies between the Mississippi and the Rocky Mountains; it occurs as far n. as the vicinity of Great Marten Lake, lat. 63° or 64°; extensive level and marshy tracts there affording it suitable food.

The American B. is very similar to the European. In general, it is of rather smaller size, but not always, and it is said sometimes to attain a weight of 2,000 lbs. Its limbs and tail or shorter, and the tail consists of fewer vertebræ. The horns are shorter and more blunt. The fore-parts are still more shaggy, and retain more of their shagginess in summer.

BISPHAM, *bĭs'păm*, David S., baritone singer: b. Philadelphia, Pa., 1857, Jan. 5, of Quaker parentage. Educated at Haverford College, Pennsylvania, he later studied music and singing in England and Italy. His début was made as the Duc de Lonqueville in *The Basoche*, London, in 1891, and since then he has been the principal baritone of the Royal Opera Company, Covent Garden, London, occasionally visiting the United States on an operatic tour. An accomplished linguist, he is equally at home in German, French, or Italian, but his greatest successes have been in Wagnerian roles, such as *Alberich* and *Wolfram*.

BISSAO, *bes-sâ'o*, an island and Portuguese station closer to the African coast than the Bissagos and opposite the Jeba's delta. Before the prohibition of slavery by the Portuguese government it was an important slave market.

BISSAGOS, *bis-sâ'gōs*, or Bijuga, *bi-jô'ja*, ISLANDS: group of small volcanic islands, about 20 in all, off the w.

coast of Africa, lat. 10° 2′–11° 42′ n., and long. 15°–17° w.; opposite the mouth of the Rio Grande. The islands are inclosed by a reef, and, with a few exceptions, are thickly wooded. Many of them are peopled by a savage negro race, who cultivate maize, bananas, and palms, and feed cattle and goats, and engage in fishing, the latter being their chief occupation. There are several fine ports. On one of the islands, Bulama, the British formed a settlement, 1792, but abandoned it the following year. It is now a thriving Portuguese settlement and the seat of government.

BISSELL, *bĭs-sĕl′*, Edwin Cone, American biblical scholar: b. Scoharie, N. Y., 1832, March 2; d. Chicago, 1894, April 9. He prepared for the ministry at Union Theological Seminary, N. Y., and held Congregational pastorates at Westhampton, Mass., San Francisco, Cal., and Winchester, Mass., and was professor of Hebrew in the Hartford Theological Seminary, 1881–92, and at the McCormick Presbyterian Seminary, Chicago, 1892–4. He published: *The Historic Origin of the Bible* (1873); *The Pentateuch: Its Origin and Structure* (1885); *Biblical Antiquities* (1888); *Genesis Printed in Colors, Showing the Original Sources from which it is Supposed to Have Been Compiled* (1892); *The Apocrypha of the Old Testament, with Historical Introductions*, his greatest work (1880).

BISSELL, William Henry Augustus, American prelate of the Episcopal Church: b. Randolph, Vt., 1814, Nov. 10; d. Burlington, Vt., 1893, May 14. Entering the Episcopal ministry in 1839, he was successively rector at West Troy, Lyons, and Geneva, N. Y., and 1868, June 3. was consecrated second bishop of the diocese of Vermont.

BISSELL, Wilson Shannon, American lawyer: b. New London, N. Y., 1847, Dec. 31; d. Buffalo, 1903, Oct. 6. He graduated at Yale University in 1869; and studied law in Buffalo with Lansing, Cleveland & Folsom. In 1872 he formed a partnership with Lyman K. Bass, the firm of which Grover Cleveland became a member in 1873. When Mr. Cleveland was elected governor of New York the firm was dissolved. Subsequently it was reorganized, and in 1900 consisted of Bissell, Carey & Cooke. He has been a delegate to several State conventions; in 1884 was a Democratic presidential elector; and in 1893–5, during Mr. Cleveland's second term as President, was postmaster-general of the United States.

BIS′SEN, Wilhem; 1798–1868; b. near Slesvig: Danish sculptor. He studied his art for ten years in Rome, under the guidance of his countryman, Thorwaldsen. Returning home, he executed a number of excellent works (a bust of Oersted, Atlanta hunting, etc.). In 1841, he returned to Rome, being commissioned by the government to make 18 statues larger than life. With these he produced a Venus, and a charming piece, *Cupid sharpening his Arrow*. Being recalled to Copenhagen, he was commis-

sioned to execute a frieze several hundred feet long for the great hall of the palace, representing the development of the human race according to the Greek mythology. Thorwaldsen, in his will, appointed B. to complete his unfinished works and have charge of his museum. In 1850 he was made director of the Acad. of Arts, Copenhagen. At the Paris Exhibition, 1855, he was the only sculptor who represented Danish art.

BISSEXTILE, n. *bĭs-sĕks'tĭl* [L. *bissextīlis*—from *bis*, twice; *sextus*, sixth]: every fourth year—so called by the anc. Romans, because in that year the sixth day of the calends of March (Feb. 24) was reckoned twice; leap-year. ADJ. pertaining to leap-year.

BISSON, a. *bĭs'ŏn* [AS. *bisene*, blind: Dut. *bij-ziend*, shortsighted]: in *OE.*, near-sighted; purblind; blinded; also spelled BEESOME, and BEESEN.

BISSON, ALEXANDRE, *be-sŏng*, French dramatist and musical composer: b. 1848. His vaudeville, *Four Cuts with a Penknife*, won for him instant celebrity. *The Deputy from Bombignac* is his masterpiece. Other comedies or operettas were: *The Late Toupinel; The Joys of Paternity; The Pont-Biquet Family.* With Théodore de Lajarte he was joint author of a *Grammar of Music* and of a *Little Encyclopædia of Music.*

BISTORT, n. *bĭs'tŏrt* [*L. bis*, twice; *tortus*, twisted]: named from the twisted or contorted appearance of its root. The ALPINE BISTORT (*P. viviparum*) dwarf, with a linear spike, grows on the White Mts., Lake Superior, and n. The Eur. SNAKEWEED has leaves tapering into a long footstalk, and one dense terminal cylindrical spiked raceme of flesh-colored flowers. The root is about the thickness of the little-finger, blackish brown externally, reddish within, and tortuous. The whole plant is astringent, containing much tannin; the root is one of the strongest vegetable astringents, and is much used in medicine, both internally and externally, in hemorrhages and many other complaints. B. is a native of meadows in Europe. See POLYGONUM.

BISTOURY, n. *bĭs'tûr-ĭ* [F. *bistouri*, an incision-knife —from *Pistoria*, now Pistoja, in Tuscany, once celebrated for their manufacture]: a small knife or scalpel for surgical purposes.

BISTRE, or BISTER, n. *bĭs'tĕr* [F. *bistre*, prepared soot: Ger. *biester*, dark-brown, bistre]: wood-soot; a pigment of a warm brown color, prepared from the soot of wood, especially beech. It is used in water-colors after the manner of Indian ink.

BISULCOUS, a. *bī-sŭl'kŭs* [L. *bis*, twice; *sulcus*, a furrow]: cloven-footed, as swine or oxen.

BISULPHATE, n. *bī-sŭl'fāt* [L. *bis*, twice; *sulphur*, sulphur]: a sulphate containing two equivalents of sulphuric acid to one of the base, e.g., acid sulphate of sodium or sodium bisulphate, $NaHSO_4$.

BIT, n. *bĭt* [AS. *bite* or *bĭta*, a bite or morsel: Dut. *beet*, a bite (see BITE)]: a small piece; a morsel; a mouthful.

BIT, n. *bĭt:* boring tool designed to be rotated by means of a bit-stock; used by carpenters and artificers in metal. BIT-STOCK, n. *bĭt'stŏk*, apparatus for rotating a wood or metal-boring bit; a brace.

BIT, n. *bĭt* [AS. *bitol:* Icel. *bitill* (see BITE)]: the part of the bridle which the horse bites; the iron mouth-piece of a bridle; V. to put the bit in a horse's mouth; to restrain. BIT'TING, imp. BIT'TED, pp.

BIT, or BITT, in Ship-building: a frame composed chiefly of two short but strong vertical timbers, fixed into or upon the deck in the fore-part of the vessel. Its main purpose is for fastening the cable when the ship rides at anchor, and for 'leading' the principal ropes of the rigging. To 'bit the cable,' is to fasten it round the bit. Various kinds are called 'riding-bits,' 'Elliott's bits,' 'Carrick-bits,' 'paul-bits,' 'jeer-bits,' 'topsail-sheet-bits,' etc. Having to resist great strains, the bits are strongly bolted to the beams that support the deck.

BITCH, n. *bĭch* [AS. *bicce:* Icel. *bikkia*, a little dog, a bitch; a woman: Ger. *petze*, a bitch; a she bear]: the female of the dog kind; an opprobrious term.

BITE, v. *bīt* [AS. *bitan;* Goth. *beitan;* Icel. *bita;* Goth. *bijten*, to bite]: to tear; to pierce; to break or crush with the teeth; to pinch with cold; to reproach by stinging words; to pain or wound: N. the seizure of anything by the teeth; wound made by the teeth; a morsel; a mouthful. BITING, imp. *bī'tĭng:* ADJ. severe; sharp; sarcastic. BIT, pt. *bĭt:* N. a small piece of anything; a tool that bores. BITTEN, pp. *bĭt'n:* ADJ. in *bot.*, applied to a leaf, root, or corolla terminating abruptly, as if bitten off short. BITER, n. *bī'tĕr*, one who. BI'TINGLY, ad. *-lĭ*, in a biting manner; sarcastically. TO BITE IN, in *etching*, to eat into or corrode the uncovered part of metallic plates by an acid. TO BITE THE DUST, to fall to the ground in the agonies of death.

BITERNATE, a. *bī-ter'nāt* [L. *bis*, twice; *terni*, three by three] in *bot.*, applied to compound leaves which form three leaflets, each of which is again divided into three.

BITHYNIA, *bĭ-thĭn'i-a:* ancient division of Asia Minor, separated from Europe by the Propontis (Sea of Marmora) and the Thracian Bosporus (Strait of Constantinople), and was bounded n. by the Euxine, and s. by Galatia, Phrygia, and Mysia. Its e. limits were not very clearly defined, but extended at least as far as Paphlagonia. It contained the famous Greek cities or colonies of Chalcedon, Heraclea, etc.; and at later periods, Nicomedia, Nicæa, and Prusa were flourishing cities of B. The inhabitants were supposed to be of Thracian origin. The country was subdued (B.C. 560) by Crœsus of Lydia, and five years later fell under the Persian dominion. But about B.C. 440 or 430, it became an independent kingdom under a dynasty of native princes, who made Nicomedia their

capital. The last king, Nicomedes III., made the Romans his heirs, and with a large addition from the Pontic kingdom, B. became a province of the empire (B.C.74). Under Trajan, B. was governed by Pliny the Younger, whose letters to the emperor on the administration and condition of the province contain the well-known passage respecting the Christians. The emperor Diocletian made Nicomedia his habitual residence. In 1298, Osman the Turk broke into the country; and in 1328, Prusa, or Brusa, then the chief town of B., became cap. of the kingdom of the Osmanli.

BITONTO, *be-ton'to* (ancient *Butuntum*): town of Italy, province of Bari, 10 m. w.s.w. of the city of Bari. It is in a fruitful plain about 5 m. from the sea, is well built, is, conjointly with Ruvo, the see of a bishop, and has a fine cathedral, monasteries, and a nunnery. There is extensive trade in a wine called *Zagarello*, which is largely cultivated in the environs. B. is the birthplace of Giordani, the mathematician. In its vicinity, the Spaniards, under Count de Montemar, gained a splendid victory over the Austrians, 1734, May 25, the result of which was that Spain re-obtained possession of the kingdom of Naples. Pop. 23,000.

BITTER, a. *bĭt'tėr* [Icel. *beitr;* Goth. *baitrs;* Ger. *bitter*, biting, stinging: AS. *biter*, bitter]: biting to the taste; sharp; severe; reproachful; satirical; painful to the feelings or mind; distressing. BIT'TERNESS, n. bitter or biting taste; severity of temper; hatred; sharpness. BIT'TERLY, ad. *-li*, in a bitter manner; sorrowfully. BITTERS, n. plu. *bĭt'tėrz*, a liquor, generally spirits, in which bitter herbs or roots have been steeped. Bitters are in three classes—simple, aromatic, and special.—The Simple bitters include such remedies as quassia, gentian, calumba, and dogwood. They increase secretion from the mucous membrane, in the mouth they promote flow of Saliva (q.v.), and in the stomach they cause increased production of gastric juice. As starchy foods are acted on by the digestive ferment contained in the saliva, and albuminoids by the gastric juice (see DIGESTION), it follows that the ingestion of bitters will increase the digestive capacity. The sense of bitterness increases the desire for food, which the increased power to digest enables the patient to eat and assimilate more. It is thus that bitters act as a tonic and not by any inherent nutrient power of the drug itself.—The Aromatic bitters contain in addition to the properties of the simple bitters an aromatic principle, and are also more or less astringent because of the presence of tannic or gallic acid. The principal aromatic bitters are Virginia snake-root and wild-cherry bark, useful in catarrhal inflammation of the respiratory tract.—The Special bitters have peculiar properties not found in either of the foregoing groups. The principal special bitters are Cinchonine and its preparations, Eucalyptus, and Hydrastis. They possess, in addition to the same properties as the simple

bitters, special virtues in certain conditions; e.g. quinine, the active principle of Cinchonine, in which small doses acts as simple bitters, but in sufficient doses is the great remedy in malarial affections (see QUININE: MALARIA). BIT'TERISH, a. slightly bitter. BIT'TERISHNESS, n. BITTER-SPAR, n. the largely crystalline and easily cleavable kinds of *dolomite* or magnesian limestone, from the magnesia in it, which the Germans call Bittersalz, Epsom salts.

BITTER-SWEET, woody nightshade; the *Solānum dulcāmāra*, ord. *Solānācĕæ*. BITTERWORT, the plant gentian; the *Gentĭāna lutĕă*, ord. *Gen'tĭanācĕæ*. BITTERN, n. *bĭt'tėrn* (bitter liquid, or salt oil), a bitter oily liquid obtained during the preparation of common salt (q.v.). When the mother-liquor of the evaporating pans ceases to deposit crystals of common salt, there is left behind in the boilers the material called bittern. It consists principally of a strong solution of common salt, with Epsom salts, and other compounds of magnesia. The B. at salt-works is generally run into tanks, and during winter, it is employed as a source of Epsom salts. The B. is treated with a little sulphuric acid, which converts the chloride of magnesium (MgCl) into sulphate of magnesium ($MgSO_4$), and on the liquid being allowed to cool, the crystals of Epsom salts (or sulphate of magnesia) separate.

BITTER, ARTHUR, pseudonym of SAMUEL HABERSTICH, Swiss poet and story writer: b. Ried, near Schlosswyl, 1821, Oct. 21; d. Bern, 1872, Feb. 20. Novelettes, stories, and poems proceeded from his pen for many years, all characterized by sympathy of tone and inoffensive realism, *Tales, Romances, and Poems* (1865–6), being most pleasing.

BITTER, KARL THEODORE FRANCIS, Austro-American sculptor: b. Vienna, Austria, 1867, Dec. 6. He came to the United States in 1889 and soon acquired world-wide reputation. He executed the sculpture on the main buildings of the World's Columbian Exposition, and was appointed director of sculpture at the Pan-American Exposition at Buffalo, and the Louisiana Purchase Exposition at Saint Louis.

BITTER ALMONDS. In medicine the oil of bitter almonds, containing prussic acid, is used as a gastric sedative and as an antispasmodic. See PRUSSIC ACID.

BITTER ASH, the quassia tree. See QUASSIA.

BITTER CRESS: see CRESS.

BITTER KING (*Soulaurea ama'ra*): shrub or small tree of the nat. ord. *Polygalaceæ* (q.v.), native of the Indian archipelago, which has received its name from its intense bitterness. The genus differs from the usual structure of the order in its regular flowers. The B. K. has large oval leaves and axillary racemes of flowers. It is used medicinally in fevers and other diseases.

BITTERN: see under BITTER.

BITTERN, n. *bĭt'tėrn* [It. *bittore;* F. *butor,* the bittern

—from mid. L. *butŏrĭŭs*], (*Botaurus*): according to some modern ornithologists, a genus of the Heron (q.v.) family (*Ardeidæ*); but regarded by others as a mere sub-genus of Heron (*Ardea*), and not a very well-defined one. Bitterns are indeed chiefly distinguished from herons by their lesser size and shorter necks with long loose plumage, which they have the power of erecting at pleasure, with the rest of their clothing feathers so as greatly to increase their apparent size. The back of the neck, however, is merely downy, or almost bare, the long feathers being on the front and sides. Bitterns also differ from herons in the greater length of their toes, the middle toe being as long as the shank. They are almost all solitary birds, inhabiting reedy and marshy places, where they lie hid during the day, and will almost allow themselves to be trodden upon ere they take wing; they feed during the night, and then, also, often rise spirally to a great height into the air, and emit loud resounding cries. Their food consists chiefly of frogs, and partly, also, of fish, lizards, water-insects, etc., and even of small birds and quadrupeds. The claw of the middle toe is serrated on the inner edge, probably to aid in securing slippery prey. The COMMON B. (*B. stellaris* or *Ardea stellaris*) is a bird very widely diffused over the old world, being found in almost all, at least of the temperate, parts of Europe, Asia, and Africa, which are sufficiently marshy for its manner of life. It is now rare in Britain, owing to drainage; but was formerly more common, and in the days of falconry, was carefully protected by law in England, on account of the sport which it afforded. Its flesh also was in high esteem, and is not rank and fishy, like that of the herons generally. In size, it is rather less than the common heron; the bill is about four inches long, the feathers on the crown of the head are greenish black, and the plumage in general of a dull yellow color, beautifully and irregularly marked and mottled with black. The B. makes a rude nest of sticks, reeds, etc., in its marshy haunts, and lays four or five greenish-brown eggs. It has a peculiar bellowing cry, which has obtained for it such English provincial names as Mire-drum, Bull of the Bog, etc., and many of its appellations in other languages, perhaps even its name B. (*Bitour, Botur, Botaurus*). Some naturalists used to assert that the booming cry of the B. was produced by the bird inserting its bill into a reed; that notion, however, has long since been proved false. When assailed, it fights desperately with bill and claws; and it is dangerous to approach it incautiously when wounded, as it strikes its long sharp bill, if possible, at the eye.—The LITTLE B. (*B. minutus* or *Ardea minuta*) is common in some parts of Europe, but rare in Britain. Its whole length is only about thirteen inches.—The AMERICAN B. (*B. lentiginosus*, or *A. lentiginosa*), a species almost equal in size to the common B., and very similar to it in habits and voice, has occasionally been shot in Britain. It is common in many parts of N. America, migrating n. and

s. according to the season. The crown of the head is reddish brown, and the colors and markings of the plumage differ considerably from those of the common B.—The LEAST B. (*B.* or *A. exiles*) is another N. American species, the length 14 in., the crown and back greenish-black, and neck chesnut. The AUSTRALIAN B. (*B.* or *A. australis*) is generally diffused throughout Australia, wherever marshes or sedgy rivers occur. In habits it closely resembles the B. of Europe. The head and upper parts generally are purplish brown, except the wings, which are buff, conspicuously freckled with brown; the throat, breast, and belly mottled brown and buff.

BITTERSWEET, or WOODY NIGHTSHADE (*Solanum Dulcamara*): plant found in hedges and thickets in most parts of Europe, Asia, and N. America. The root is perennial; the annual stems climbing and shrubby, many ft. in length; the leaves ovate-heart-shaped, the upper ones spear-shaped; the flowers purple, in drooping corymbs, much resembling those of its congener, the potato, but much smaller, followed by ovate red berries of tempting appearance, which, being poisonous, are not unfrequently the cause of serious accidents, particularly to children. The twigs, collected in autumn after the leaves are fallen, are used as a diaphoretic and diuretic.—The WAX-WORK BITTERSWEET (*Celastrus scandens*), with orange pods and scarlet-covered seeds, belongs to another family.

BITTER VETCH: see OROBUS.

BIT'TERWOOD: certain species of the genus *Xylopia* trees and shrubs remarkable for the bitterness of their wood, particularly the West Indian *X. glabra*. Furniture made of this wood is safe from the attacks of insects.—The genus *Xylopia* belongs to the natural order *Anonaceæ* (q.v.). The fruit of some of the species, particularly *X. sericea*, is highly aromatic and pungent like pepper. *X. sericea* is a large tree, a native of Brazil; its bark is used for making cordage, which is excellent.

BITTERWOOD is the name also of *Pierœna excelsa* (formerly *Quassia excelsa*), a tree of the nat. ord. *Simarubaceæ* (q.v.), native of Jamaica, the wood of which is used in medicine for the same purposes as Quassia (q.v.), and often under that name; indeed, it is probable that all the present quassia of the shops is really this wood. It is, botanically, very nearly allied to the true quassia, and possesses very similar properties, containing the crystallizable bitter principle called Quassite or Quassin. The wood, which is intensely bitter, is a very useful stomachic and tonic; an infusion of it is a well-known and useful fly-poison; and it appears to act as a powerful narcotic on many quadrupeds.

BITTS, n. plu. *bĭts* [Icel. *biti*, a beam in a house or a ship: Sw. *beting*, a bitt: F. *bites:* Sp. *bitas*]: two strong pieces of timber in the fore-part of a ship on which the cables are fastened when she lies at anchor; the perpendicular supports of the windlass. TO BITT, v. to put round the bitts. BIT'TING, imp. BIT'TED, pp.

BITUMED, a. *bĭt-ūmd′:* smeared with bitumen.

BITUMEN, n. *bĭ-tū′mĕn* [L *bĭtūmen*—from Gr. *pitta*, the pine or pitch tree: F. and It. *bitume*]: mineral pitch or tar; one of the family of mineral resins or hydrocarbons, highly inflammable, and burning with much smoke and flame,—in its purest and most fluid state, it is called *naphtha*—of the consistence of oil, *petroleum*—as slaggy mineral pitch, *maltha*—as elastic mineral pitch or caoutchouc, *elaterite*—as a black, hard, brittle, and glossy mineral, *asphalt*. BITU′MINATE, v. *-mĭ-nāt*, to impregnate with bitumen. BITU′MINA′TING, imp. BITU′MINA′TED, pp. BITU′MINIF′EROUS, a. *-ĭf′ĕr-ŭs* [L. *fero*, I produce]: producing bitumen. BITU′MINIZE, v. *-mĭ-nīz*, to prepare or coat with bitumen. BITU′MINI′ZING, imp. BITU′MINIZED, pp. *-nīzd*. BITU′MINIZA′TION, n. *-nī-zā′shŭn*, the natural process of being converted into bituminous matter. BITU′MINOUS, a. *-mĭ-nŭs*, full of or containing bitumen. BITUMED, a. *bĭ-tūmd′*, in *OE.*, smeared with pitch.

BITU′MEN: a mineral substance, remarkable for its inflammability and its strong peculiar odor; generally, however, supposed to be of vegetable origin. The name, which was in use among the ancient Romans, is variously employed, formerly to include a number of the substances called *Mineral Resins* (see RESINS), now the mixtures of hydrocarbons such as, e.g., *Naphtha* (q.v.) and *Petroleum* (q.v.) or Mineral Oil, and the solid ones called *Mineral Pitch*, *Asphalt* (q.v.), *Mineral Caoutchouc*, etc. Sometimes in a more restricted sense it is applied by mineralogists to only some of these, and by some mineralogists to the solid, by others to the liquid ones. All these substances are, however, varying mixtures essentially alike. Petroleum passes into viscid bitumen, sometimes called maltha or pittasphalt or mineral tar, and this grades insensibly into asphalt, which is solid bitumen. The fluid forms become more or less solid by loss of the more volatile components, and by oxygenation. Near the centre of the Baku region, on the Carpian Sea, a light naphtha is found, while on the border of the region is a thicker petroleum, passing into solid asphalt. Petroleum is composed of different series of hydrocarbons, such as the paraffins, the olefines, the benzenes. Asphalt, (q.v.), or B. solidified, yields a little of oils vaporizable at 100°; much of heavy oils (sometimes 85 per cent.) from 100° to 250°; resin-like substances soluble in alcohol; lustrous, pitch-like substances soluble in ether; others black or brownish, soluble in neither; and some nitrogenous, amounting often to 1 or 2 per cent. of nitrogen.

The old way of accounting for the origin of these substances was by supposing that some 'volcanic' force acted on beds of bituminous coal. It is now abundantly illustrated in both hemispheres that the origin may be in unaltered strata of any age from Silurian up to Tertiary, at the ordinary temperatures of inconsiderable depths, time accomplishing the results that were once referred to volcanic agency. The material required was doubtless organic,

but it is a question how far the immense animal life of the geological past contributed to the result. Some animal fossils contain B. In a number of localities, there is reasonably a connection with bituminous shales, with a vegetable history, and largely found in rocks older than the Carboniferous.—Mineral Caoutchouc or Elastic B., called *Elaterite* (CH_2), is brown and flexible; one kind, like india-rubber, will erase pencil marks: one of the few places where it is found is a coal-mine near Southborough, Mass.

BITU'MINOUS COAL: varieties of coal which contain a large percentage of volatile matter. They yield, on their destructive distillation, considerable gas, remarkably pure and with good illuminating qualities, and are consequently largely used for that purpose. See COAL.

BITU'MINOUS LIMESTONES: limestones impregnated and sometimes deeply colored with bituminous matter, obtained from decaying vegetables, or, more probably, from the decomposed remains of those animals, the hard parts of which form so large an amount of the rock.

BITU'MINOUS SHALES: indurated beds of clay occurring in the coal-measures, and containing such an amount of carbon and volatile matter that they are able to keep up combustion when mixed with but a little coal. They are indeed impure coal, with a large percentage of ash or earthy matter, which after burning retains the original form. See COAL.

BITZIUS, *bĭt'se-us*, ALBERT (better known under the *nom de plume* of Jeremias Gotthelf): 1797, Oct. 4—1854, Oct. 22; b. Morat, canton of Freiburg, Switz.: author. He was educated for the church; and after holding several cures, was appointed, 1832, pastor of Lützelflüh, in Emmenthal, canton of Bern, which office he retained till his death. His first work was *The Mirror of Peasants* (Burgsdorf, 1836), the touching history of a poor villager, Jeremias Gotthelf, which pseudonym B. ever after retained. In 1838, appeared his *Sorrows and Joys of a Schoolmaster;* in 1839, *Dursli, the Brandy-drinker*, and *How Five Maidens miserably perish in Brandy;* in 1842–46, *Scenes and Traditions of the Swiss*, 6 vols., in which B. narrates, with great art, the old national legends, among which the most remarkable is the *Reconciliation*. The best and most popular of his stories, however, are *Grandmother Katy* (Berlin, 1848); *Uli, the Farm-servant* (Berlin, 2d ed., 1850); its continuation, *Uli, the Farmer* (2d ed., Berlin, 1850); and *Stories and Pictures of Popular Life in Switzerland* (Berlin, 1851). Subsequently, he wrote several pamphlets against the extreme German democrats, without, however, violating those popular sympathies and liberal convictions which pervade his writings, and which at an earlier period led him vehemently to oppose the family government of the Bernese aristocracy. His last work was *The Clergyman's Wife* (1854). B.'s writings are greatly relished in Switzerland. They are characterized by simplicity, inventiveness, a wonderful fidelity in the delineation of manners and habits, great vigor of descrip-

tion, and raciness of humor. See his Life by Manuel (Berl. 1857), and Brockhaus (Berl. 1876).

BIURET, n. *bĭ′ū-rĕt* [*bi*, twice, and *urea*]: a chemical substance formed in the decomposition of urea, when the latter substance is heated to 150–160°C.

BIVALVE, n. *bī′vălv* [F. *bivalve*—from L. *bis*, twice; *valvæ*, folding-doors]: a shell consisting of two parts which shut and open, as the mussel or oyster; in *bot.*, a seed case or vessel which consists of two parts like a mussel. ADJ. also BIVAL′VULAR, a. *-vū-lĕr*, and BIVAL′VOUS, a. *-vŭs*, having two shells as the oyster or mussel.

Bivalves.—Mollusks of the class *Pelecypoda* (q.v.) whose coverings consist of two concave shell plates or valves.

Bivalves (for example, the clam) are entirely protected by the valves, which are connected by a hinge, consisting of a large tooth or teeth (usually three), and a ligament. In the clam both valves are alike, in the scallop the hinge margin is eared, and the shell is marked with radiating ridges, while in most bivalves there are simple lines of growth. On the interior, which is usually lined with mother-of-pearl, are either one (in oysters and scallops) or two (clams, etc.) roundish muscular impressions made by the single or the two adductor muscles by which the valves are closed. The shell is often covered by an epidermis. The hinge is situated directly over the heart, and is therefore dorsal of 'hæmal.' The shell is secreted by the thickened edge of the mantle or body-walls. There is in bivalves in distinction from snails (*Gastropoda*) no head and the mouth is not armed with teeth or a lingual ribbon, present in snails. The mouth is small with soft lips, and in each side is a pair of labial palpi. The short œsophagus opens into a small stomach, which receives the contents of the liver. The long intestine is coiled in the visceral mass, the solid disk-like portion of the body in the clam and oyster; the intestine also passes through the ventricle of the heart, and then ends opposite the upper division of the siphon. This heart is three-chambered, consisting of a ventricle and two auricles. The siphon forms the so-called head of the clam, though it is situated at the posterior end of the body; it forms a double tube, ending in an excurrent and incurrent orifice surrounded by a circle of tentacles which are sensitive to the touch. The siphon is very long in the clam (*Mya*) and other bivalves which burrow in the sand or mud and live in deep holes. Locomotion is effected by the so-called 'foot,' which is a wedge-shaped or hatchet-shaped fleshy tongue-like mass situated at the front end under the mouth. Its hatchet-shape gives the name *Pelecypoda* to the class. This foot is enormous in the razor-fish, which burrows with extreme rapidity in the sand. In fixed bivalves, such as the oyster and mussel, the foot and siphon are reduced by atrophy or are entirely wanting. There being no head, there are usually no eyes, except in the scallops, where they are numerous, large, and situated on the thickened edge of the mantle. Bivalves breathe by one pair, more usually

two pairs, of leaf-like gills; situated on each side of the visceral mass. The individuals are bisexual, each being male or female. The nervous system consists of three pairs of ganglia, connected by a nerve-thread. The supraœsophageal ganglion is the so-called 'brain,' being situated over the mouth; the pedal ganglion is in the centre of the foot, while the visceral ganglion is near the middle of the body. Most bivalves possess an organ of hearing or of equilibration, a very minute otocyst situated in the centre of the foot, and connected by a nerve with the pedal ganglion. The ovaries are yellowish, voluminous glands forming the larger part of the visceral mass. These mollusks are very prolific, the oyster laying about 2,000,000 eggs.

BIVENTRAL, a. *bī-vĕn'tral* [L. *bī*, two; *venter*, belly]: n. *anat.*, having two bellies; as 'a *biventral* muscle.'

BIVIOUS, a. *bĭv'ĭ-us*, or *bī'vĭ-ŭs* [L. *bī*, two; *via*, way]: going in two directions.

BIVOUAC, n. *bĭv'wăk* [F. *bivouac*, a bivouac, guard—from Ger. *bei-wache*, an additional watch: Sp. *vivac*, town-guard]: the encampment of an army for the night in the open air, generally without tents: V. to take rest or refreshment in the open air, as an army on march, or travellers on a journey. BIV'OUACKING, imp. BIV'OUACKED, pp. *-wăkt*.

BIV'OUAC: the encampment of soldiers in the open air, without tents, where every one remains dressed, and with his weapons by him. Even during the Seven Years' War it was no uncommon thing for the whole army, when in the vicinity of the enemy, to pass the night in their ranks, each lying down in his place, in order to be ready to stand to their arms at a moment's notice. But the French revolutionary armies introduced the practice of dispensing with tents altogether, and regularly passing the night *en bivouac*. Hence, in a great measure, that rapidity in their motions which long made them uniformly successful; and the practice was afterward imitated by the other armies of Europe, though less by the English. Soldiers in B. light fires, and improvise, where it is possible, huts of straw, branches, etc. But this mode of encampment, though favorable to celerity of movement, is purchased at the expense of the soldiers' health, besides being destructive of discipline, by leading to plundering and destroying of houses, fruit-trees, etc , in the vicinity. Accordingly, the tent is again coming into use, and for permanent encampments, regularly constructed, wooden huts have been introduced. There are, however, many cases where the B. is the only resource.

BIWEEKLY, a. *bī-wēk'lĭ* [L. *bis*, twice, and *weekly*]: strictly every two weeks, or once a-fortnight—erroneously used in the sense, twice in each week.

BIXA: see ARNOTTO.

BIXBY, JAMES THOMPSON, American author and clergyman: b. Barre, Mass., 1843, July 30. He graduated

at Harvard in 1864, and became a Unitarian minister. He has published: *Similarities of Physical and Religious Knowledge* (1876); *The Crisis in Morals* (1891); *Religion and Science as Allies* (1895); *Ethics of Evolution* (1900); *The New World and the New Thought* (1902).

BIZARRE, a. *bĭ-zâr'* [F. *bizzarre*, strange, capricious—from Sp. *bizarro*, valiant]: odd; fantastical. BIZZAR'RO, *-zâr'rō* [It.]: in *music*, strange and fantastical, as applied to the style of movement. BIZARRE, n. a variety of carnation; the *Dĭan'thŭs caryŏphyl'lus*, ord. *Car'yophyllăcĕæ*.

BIZERTA, *be-zĕr'tâ*, or BENZERTA, *ben-zĕr'tâ* (anicent *Hippo Diarrhytus* or *Zaritus*): seaport town of Tunis, at the end of a deep gulf or bay of the Mediterranean, and at the mouth of a lagoon united to the gulf by a narrow channel. It is the most northerly town in Africa, being about 38 m. n. w. of Tunis; lat. 37° 17′ n., long. 9° 51′ e. Its port, formerly one of the best in the Mediterranean, has been suffered to fill up, until now only small vessels can be admitted. The fisheries of the lake are very productive, tunnies especially abounding; and much coral is obtained. Hence its importance to the French, who in 1881 made themselves masters of Tunis. Agathocles fortified B. B.C. 307; and under the Romans it was a free city. Pop. abt. 8,000.

BIZET, ALEXANDER CESAR LEOPOLD, *be-zā*, (better known as GEORGE BIZET), French composer: b. Paris, 1838, Oct. 25; d. there 1875, June 3. He studied with Halvéy, whose daughter he married, and at the Paris Conservatory. His operas include: *The Pearl Fishers* (1863); *The Fair Maid of Perth* (1867); *Djamileh* (1872); and *Carmen* (1875), his most famous composition, which retains all its early popularity and is founded on Mérimée's novel of that name.

BIZIU'RA: see MUSK DUCK.

BJERREGAARD, *byĕr-re-gârd*, CARL HENRY ANDREW, Danish-American writer: b. Fredricia, Denmark, 1845, May 24. He served five years in the Danish army, and came to America in 1873. He has been librarian of the Astor Library, New York, from 1879, and has written: *Mysticism and Nature Worship; Being and the Philosophical History of the Subject.*

BJÖRNSON, *be-yörn'son*, BJÖRNSTJERNE: b. Qvikne, Norway; author: 1832, Dec. 8; son of a Lutheran clergyman. He graduated at the Univ. of Christiania 1851, and began at once to write sketches and theatrical criticisms for the press. He also wrote *Valborg*, a play, which was accepted by the Royal Theatre, Christiania, but withdrawn by the author. In 1856 he went to Copenhagen, where he published his first book, *Synnöve Solbakken*, a tale, which gained immediate popularity, and was followed 1858, by *Arne*, a novel. Returning to Norway, he became director of the National Theatre, Bergen; and wrote national dramas and tragedies which made a profound impression as being the first effort to create a modern Norse literature. He managed a theatre in Christiania 1863–68, making his

home in that city, though traveling frequently and extensively. He was at Christiania part editor of the *Aftenblad* in 1860, then lived several years abroad, and in 1866 became editor of the *Norsk Folkeblad*. In 1869–72 he was co-director of a Copenhagen periodical, and much of his later life has been passed abroad. The democratic tendencies to be found in his novels have found a practical outcome in the active part taken by him in political questions bearing upon the Norwegian peasantry and popular representation. He has been for a long period the leader of the Norwegian republicans, and the national entity symbolized by the change made in the Norwegian flag on 1901, Jan. 1., is more nearly due to him than to any one else. He is the greatest distinctively Norwegian writer of his day, and his popularity among his countrymen is very great. In 1880–1 he traveled and lectured in the United States. His dramas include: *Sigurd Jorsalfar* (1872); *Mary Stuart in Scotland* (1864); *The Newly Wedded Pair* (1866); *Sigurd Slembe* (1872); *The Editor* (1874); *A Bankruptcy* (1875); *The King* (1877); *Leonarda* (1879); *The New System* (1879); *A Glove* (1883); *Beyond Our Strength* (1883); *Geography and Love* (1885). His verse includes: *Poems and Songs* (1870); *Arnljot Gilline*, an epic (1870). Besides the pastoral tales: *Arne* (1858); *A Happy Boy* (1860); *The Fisher Maiden* (1868); *Synnœve Solbakken*, he has written the novels: *The Bridal March* (1873); *Magnhild* (1877); *Captain Mansana* (1879); *The Heritage of the Kurts* (1884); *In God's Way* (1889); *Absalom's Hair*; etc. See Boyesen, *Essays on Scandinavian Literature* (1895); Gosse, *An Essay on the Writings of Björnson* (1895); Brandes, *Moderne Geister* (1897).

BJORNSTJERNA, *byėrn'shĕr-nâ*, Magnus Frederick Ferdinand (Count), Swedish statesman and author: b. Dresden, 1779, Oct. 10; d. Stockholm, 1847, Oct. 6. He was educated in Germany, and in 1793 proceeded to Sweden to enter the army. At the storming of Dessau he received a severe contusion from a canon-ball, but he was able, notwithstanding, to be present at the battle of Leipsic. He afterward concluded the capitulation of Lübeck with Gen. Lallemand, and received the surrender of the fortress of Maestricht. He concluded with Prince Christian Frederick at Moss the convention which was followed by the union of Norway and Sweden. He published *The British Rule in the East Indies* and *Theogony, Philosophy, and Cosmogony of the Hindoos* (1843).

BLAB, v. *blăb* [Dan. *blabbre*, to babble: Ger. *plappern*; L. *blaterare*, to speak confusedly or thoughtlessly, to babble: Gael. *blabaran*, a stammerer: Dut. *labben*, to tell tales]: to tattle; to tell tales; to tell secrets in a thoughtless manner: N. a tell-tale; one who reveals things which ought not to be told. Blab'ber, n. *-bėr*, a tell-tale. Blab'bing, imp. Blabbed, pp. *blăbd*.

BLACAS, Pierre Louis Jean Casimir, *blâ-kâ*, (Duc de), French statesman: b. Aups, Var., 1771, Jan. 12; d. Kirch-

burg, Austria, 1839, Nov. 17. He was cabinet minister in the time of Louis XVIII., and a confidential adviser of the Bourbons; twice minister to Naples; ambassador to Rome to negotiate the *concordat* of 1817; went into exile upon the banishment of Charles X.; and offered the king his fortune, which was not accepted. He was so faithful to the Bourbons as to be unpopular with the people. He was a large collector of antiquities and founded the Egyptian Museum at Paris.

BLACK, a. *blăk* [Ger. *bleich;* Dut. *bleek,* pale, or bleek, which seems to be the original meaning of bläck: Icel. *blakkr,* bluish-gray or pale: Sw. *bläck,* ink; *blacka,* to smear with ink: Dut. *blakeren,* to scorch]: of the color of night; the opposite of white; dark; cloudy; dismal; sullen; very wicked; in compounds, BLACK generally means 'unlawful; wicked:' N. name of the darkest of colors; a negro; the absence of color; mourning, as *in black:* V. to make black; to dirty or soil. BLACK'ING, imp.: N. a substance used in polishing boots and shoes; that which makes black. BLACKED, pp. *blăkt.* BLACK'ISH, a. a little black. BLACK'LY, ad. *-lĭ.* BLACK'NESS, n. the quality of being black. BLACKS, n. plu. in *OE.,* and *familiarly,* the appropriate articles of dress when in mourning. BLACK ACT, a law which makes it felony to appear armed with the face blackened for the purpose of taking game. B.-AMBER, the name given by Prussian amber-diggers to jet. B.-ART, magic or conjuration. B.-ASH, impure carbonate of soda. B.-BALL, v. in *a society,* to reject a proposed member by putting *black balls* in the voting or ballot box. B.-BALLING, imp. B.-BALLED, pp. B.-AVICED, *-ă-vīst'* Scot.—from OF. *àvis,* to face—from L. *vīsus,* face: OE. *avise,* to look at]: in *Scot.,* dark-complexioned. B.-BAND, a Scotch miner's term for the iron-stones of the coal-measures which contain coaly matter sufficient for calcining the ore without the addition of coal. B.-BERRY, the fruit of the bramble —the *Rubus frutĭcōsus,* ord *Rosācĕæ.* BLACKBIRD (q.v.), a species of perching-bird. B.-BOARD, a board painted black, used in schools for teaching purposes. B.-BOOK, an old book said to have been composed in 1175, containing a description of the court of exchequer, its officers, privileges, etc.; a book compiled under the authority of Henry VIII. in regard to monasteries and their abuses; a book treating on necromancy; applied to a book or a report exposing abuses. TO BE IN ONE'S B.-BOOKS, out of favor; in disgrace. B.-BROWED, a. applied to a person with black eyebrows; gloomy; threatening; dismal. BLACK-BRYONY, the Tamus, a genus of plants belonging to the order *Smilaceæ* (Sarsaparillas). BLACKCAP, a bird so called from its black crown; an apple roasted till black; a cap put on by a judge before passing sentence of death on a criminal. B.-CATTLE, a general term for bulls, oxen, and cows. B.-CHALK, a soft black or bluish-black clay or shale found in subordinate layers in several formations—also called ITALIAN CHALK, GERMAN CHALK, etc. BLACK-COAT, a colloquial name for a clergyman. B.-COCK, the heath-cock or black grouse.

B.-CURRANTS, the well-known small black berries of a bush common in our gardens—the *Rĭbes nīgrum*, ord. *Grossulārĭācĕæ* or *Rĭbēsĕācĕæ*. B.-DEATH, the terribly fatal plague of the fourteenth century, in which the body after death rapidly became black and putrefied—said to have carried off 25 millions in Europe alone. B.-DRAUGHT, a medicinal mixture of senna and magnesia or Epsom salts, and aromatic spirits of ammonia. BLACK-FISH: see that title. BLACK FRIAR, one of an order of monks, also called Dominicans. BLACK GUM, the *Nyssa multiflora*, a tree 40 to 50 feet high. Its wood, which does not easily split, is made into naves for carriage-wheels and blocks for hatters. B.-FLUX, a mixture of carbonate of potash and charcoal, used in chemical operations. B.-HEARTED, having a malicious and hate-bearing heart. B.-HOLE, a place of confinement for soldiers. B.-HOLE OF CALCUTTA, in 1756, a dark, close cell in which Suraja Dowlah confined 146 British prisoners, only 23 remaining alive next morning when taken out. B.-JACK, formerly a leather cup; a miner's term for sulphuret of zinc or blende. B.-LEAD, a familiar name for *graphite*, from its resemblance to the metal lead, called also *plumbago*, used in making lead pencils. B.-LEGS, a disease among calves and sheep. B.-LEG, a common gambler; a cheat. B.-LETTER, the old English alphabetic character. B.-LIST, a periodical published privately for the use of the mercantile and trading community, containing lists of insolvents, dishonorers of bills, etc. B.-MAIL [see MAIL 2]: a tax in money or kind paid in olden times to robbers for protection; any extortion through threat of accusation or exposure in the public prints. BLACK MONDAY, Easter Monday; specially Easter Monday, 1351, when people perished of cold in England; also in 1360, when the cold was fatal to many of Edward III.'s soldiers besieging Paris. B.-PUDDING, a pudding made of blood thickened with meal. BLACK SEA, said to be so named from the prevailing black color of of the rocks and coal-formations on certain parts of its shores. B.-SHEEP, an outcast; a person ill-behaved and of low habits. B.-STRAKES, a range of planks immediately above the wales in a ship's side covered with tar and lamp-black. B.-THORN, a tree very branchy, armed with strong sharp spines, and bearing small round black fruit like plums or cherries—also called the *sloe*—the *Prunus spīnōsa*, ord. *Rosācĕæ*. BLACK-TIN, tin ore when beaten into a black powder and washed ready for smelting. B.-VOMIT, one of the fatal symptoms of yellow fever. B.-WAD, an earthy ore of manganese, usually called WAD, which see. BLACK-WALNUT: see WALNUT. B. WATCH, soldiers employed to preserve order in the Scottish Highlands, embodied as 42d British Regt. in 1739, so named from the dark color of their tartan. BLACKAMOOR, n. *blăck'ă-môr*, a negro; a black man. BLACK AND BLUE, the dark color of a bruise in the flesh. BLACK AND WHITE, in writing—that is, in black ink on white paper.

BLACK: the darkest of all colors; or, as it may be con-

sidered, the negation of color, resulting from the absorption of the rays of light by certain substances. Painters produce it by an unequal combination of the three primary colors. In mediæval art, B. was symbolical of evil, error, and woe, thus we find Christ, when the old illuminators wished to represent him as wrestling against the Spirit of Evil, arrayed in black drapery; and Byzantine painters, to express the sorrow of the Virgin Mary, gave her a black complexion. 'All faces shall gather blackness,' is the expression of Joel, when he wishes to convey the idea of the trouble of the people when the calamities which, with prophetic eye, he sees brooding over Jerusalem, should come to pass. B. clothing among some oriental nations was regarded as a badge of servitude, slavery, or low birth; among the Moors, it has several significations—obscurity, grief, despair, constancy. B. in blazonry, under the name of sable, denotes constancy, wisdom, and prudence. For B. as a funeral color, see FUNERALS: MOURNING.

BLACK PIGMENTS, used in painting, are derived principally from animal and vegetable substances. They are very numerous, and of different hues and degrees of transparency; but the most important are the vegetable blue-black—obtained from beech-wood burned in close vessels—ivory black, cork-black, and lamp-black, the principal constituent of all being charcoal or carbon. A fine-toned black pigment is obtained by burning German or French Prussian blue. Combined with white, black pigments, which are slow driers, yield grays of several tints.

BLACK, ADAM: 1784–1874: publisher; b. and educated in Edinburgh. In 1808, having completed an apprenticeship, he commenced business for himself, and some years afterward he took his nephew Charles into partnership, and they established the house of Adam and Charles Black. In 1827, the firm acquired the copyright of the Encyclopædia Britannica, and in 1851 of Walter Scott's Waverley Novels and some of his other works. Adam Black, besides holding many municipal offices, was twice elected lord provost of Edinburgh. He favored unsectarian education, absolute freedom of speech, and religious liberty.

BLACK, ALEXANDER, American author: b. New York, 1859, Feb. 7. He has published *The Story of Ohio* (1888); *Photography Indoors and Out* (1894); *Miss Jerry* (1895); *A Capital Courtship* (1897); *Miss America* (1898); *Modern Daughters* (1899); *The Girl and the Guardsman* (1900); *Richard Gordon* (1902).

BLACK, CHARLES CLARKE, American lawyer: b. Mount Holly, N. J., 1858, July 29. He studied law and was admitted to the New Jersey bar in 1881. He has since practised in Jersey City, and has published *Proof and Pleadings in Accident Cases* (1886); *New Jersey Law of Taxation* (1893); *Law and Practice in Accident Cases* (1900).

BLACK, FRANK S.: lawyer and statesman: b. Limington, York co., Me., 1853, Mar. 8; son of Jacob B., a farmer.

He was educated at Lebanon Acad. and Dartmouth College; studied law in Troy, N. Y., was admitted to the bar 1879, and elected to congress 1894. His fearlessness and legal skill in prosecution of the murderers of Robert Ross, a republican watcher at the polls on election day (1894), brought him into public notice, and made possible honest elections throughout the state. He was elected governor of N. Y. (1896) by a plurality of about 213,000.

BLACK, James, American prohibitionist: b. Lewisburg, Pa., 1823, Sept. 23; d. 1893, Dec. 16. He joined a temperance society at the age of 17, and throughout his life was a determined advocate of prohibition and legislation for its enforcement. He was the first to propose the formation of a temperate party, was one of the committee that called a national convention to organize the Prohibition party (q.v.) and was elected its president when the convention met in Chicago, 1869, Sept. 1. At the Columbus, Ohio, convention, 1872, Feb. 22, he was made the first nominee of the party for President of the United States. His ticket received 5,608 votes in the election of that year. He published: *Is There a Necessity for a Prohibition Party?* (1876); *History of the Prohibition Party* (1880); *The Prohibition Party* (1885).

BLACK, Jeremiah Sullivan, American jurist and statesman: b. Glades, Somerset county, Pa., 1810, Jan. 10; d. York, Pa., 1883, Aug. 19. At 17 years of age he entered the law office of Chauncey Forward, in Somerset, an eminent member of the bar, and was admitted to the courts in 1830, being still in his minority. In April, 1842, he was appointed by the governor president judge of the judicial district in which he resided, and confirmed by the Senate upon a strict party vote. In 1851, when a change in the State Constitution made the judges elective, he was nominated as judge of the Supreme Court by the Democratic convention, before which he was not a candidate. Of the 10 candidates named by the two parties, he obtained the largest popular vote. Under the mode of drawing provided by the constitution, a three years' term was assigned to him, and he became chief justice of the court. In 1854 he was reelected to this place, by a majority of 47,000 votes, though the candidate for Governor on the same ticket was defeated by 37,000. On 1857, March 5, while engaged in the discharge of his judicial duties at Philadelphia, he received a telegraphic despatch from President Buchanan, tendering him the appointment of attorney-general of the United States. He soon after appeared on behalf of the government, in a disputed land claim from California, involving an important principle upon which hundreds of similar cases depended. He achieved a great success, at once becoming famous as a jurist.

In 1860, December, Mr. Black succeeded Mr. Cass as Secretary of State. After the election of Lincoln, Judge Black retired to his law practice. In 1868, he was counsel for President Johnson in the famous impeachment trial.

In 1877 he appeared as counsel for S. J. Tilden before the Electoral Commission. Besides a great jurist, Judge Black was a brilliant conversationalist, classical scholar, and powerful orator. His collected *Essays and Speeches* were published in 1885.

BLACK, John: 1783–1855, June 25, b. Berwickshire, son of a shepherd, or farm-laborer, in the Lammermoors, near Dunse: editor. Left an orphan at twelve years of age, B. commenced his life's work in the office of a Dunse writer, which he soon left for Edinburgh, where he was engaged for several years as a writer's clerk. While thus employed B. was assiduous in self-education; and besides considerable progress made in classical studies, he acquired German from a German musician in an Edinburgh band, and Italian from a refugee. He went to London about 1810, and was immediately engaged as a parliamentary reporter for the *Morning Chronicle*, of which paper he afterwards became editor. Under his management the *Morning Chronicle* was celebrated for its independence and fearless advocacy of progress, and that at a time when subserviency was so common that it was regarded as little or no disgrace. He retired from the editorship in 1843, and continued to reside, until his death, in a pleasant cottage on the Kentish estate of one of his friends. Among those who served on the *Morning Chronicle* under Mr. Black was Charles Dickens. B. was author of a *Life of Tasso, with an Historical and Critical Account of his Writings* (2 vols. Edin. 1810), and the translator of the lectures of the brothers Schlegel on *Dramatic Art and Literature* (since republished by Bohn), and on the *History of Literature Ancient and Modern*, as well as of one or two works from the French and Italian.

BLACK, John Charles: soldier and lawyer: 1839, Jan. 27——————; b. Lewiston, Miss. On the death of his father the family removed to Danville, Ill., where he was a teacher and fitted himself for Wabash College. He was near the close of his junior year when Ft. Sumter was fired on, and within an hour after receipt of the news he enlisted in the 11th Ind. zouaves, subsequently recruiting for three years' service, and being commissioned maj. 37th Ill. vol. inf. 1861, Sep. He remained in the service till the close of the war, and was promoted successively lieut.-col., col., and brig.gen. for meritorious services. At Pea Ridge, Ark., 1862, Mar. 7, he was severely wounded in the right forearm, and at Prairie Grove, Ark., Dec. 7, in the left upper arm. He was commissioner of pensions 1885–88; in the latter year was a prominent candidate before the national democratic convention for the vice-presidential nomination; mem. of Congress for Ill. 1893–5; U. S. atty.-gen., northern district, 1895–9; and became president of the U. S. Civil Service Commission in 1904.

BLACK, Joseph: 1728–99, Nov. 26; b. Bordeaux, where his father was engaged in the wine-trade: chemist Both his parents were of Scotch descent, but natives of

Belfast, to which their son was sent for his education, 1740. In 1746, he entered the Univ. of Glasgow, and studied chemistry under Dr. Cullen. In 1751, he went to Edinburgh to complete his medical course, and in 1754 took his degree. His thesis, on the nature of the causticity of lime and the alkalies, excited attention. In 1756, on the removal of Cullen to Edinburgh, B. succeeded him as prof. of anatomy (which branch he afterward exchanged for medicine) and lecturer on chemistry in Glasgow. Between 1759 and 1763, B. evolved that theory of 'latent heat' on which his scientific fame chiefly rests, and which formed the immediate preliminary to the next great stride in discovery by his pupil and assistant, James Watt. In 1766, Cullen was appointed to the chair of theoretical medicine in Edinburgh, and B. succeeded him in the chair of chemistry. Thenceforth he labored chiefly in the elaboration of his lectures, in which he aimed at the utmost degree of perspicuity, and with perfect success. His class became one of the most popular in the university; it occasioned, however, some disappointment that one so capable of enlarging the territory of chemistry made no further contributions to that science. Though of an extremely delicate constitution, he prolonged his life, by care and temperance, to the age of 71. His lectures were published, 1803 (Edin. 2 vols. 4to), edited with a biographical and critical preface, by Prof. Robison.

BLACK, William: novelist: b. Glasgow, Scotland, 1841, Nov. 13; d. Brighton, England, 1898, Dec. 10. He received a private school education; studied some time in the Glasgow School of Art; abandoned his art studies for journalism, and was employed several years on the *Glasgow Weekly Citizen.* He removed to London and began writing for the magazines 1864; was a special correspondent for the *London Morning Star* in the Prusso-Austrian war 1866; and in 1867 published his first novel, *Love or Marriage,* founded on incidents in that war. After serving as asst. editor of the *London Daily News* four or five years, he gave up journalism, and afterwards applied himself wholly to writing fiction. His published works include, beside the above, *In Silk Attire* (1869); *Kilmeny; The Monarch of Mincing Lane; A Daughter of Heth* (1871); *The Strange Adventures of a Phaeton* (1872); *A Princess of Thule* (1873); *The Maid of Killeena and Other Stories* (1874); *Three Feathers* (1875); *Madcap Violet* (1876); *Green Pastures and Piccadilly* (1877); *Macleod of Dare* (1878); *White Wings: A Yachting Romance* (1880); *Sunrise: A Story of These Times* (1881); *The Beautiful Wretch* (1882); *Shandon Bells* (1883); *White Heather* (1886); *Sabrina Zembra; The Four Macnichols; Yolande; The Strange Adventure of a House-Boat* (1889); and *Prince Fortunatus* (1890); *Stand Fast, Craig Royston* (1890); *Wolfenberg* (1891); *Donald Ross of Heimra* (1891); *The Magic Ink, and Other Stories* (1892); *Judith Shakespeare* (1884); *In Far Lochaber* (1889); *Highland Cousins* (1894); *Briseis* (1896); and *Wild Eelin* (1898). Black's novels have en-

joyed much popularity especially in the United States. His subjects are drawn from many lands, but it is in dealing with the Scottish Highlands that he is at his best. He also wrote a *Life of Goldsmith* for the English Men of Letters series. See Wemyss Reid, *William Black, Novelist* (1902).

BLACKADDER, John, Scottish preacher: b. 1615; d. 1685, December. He entered the Presbyterian ministry and when, in 1662, the episcopal form of church government was forced upon a people who were generally repugnant to it, Blackadder, so far from complying with the new system, employed himself for several successive Sundays in exposing what he considered its unlawfulness, and, in his own words, entered his 'dissent in heaven' against it. He was obliged to demit his charge in favor of an Episcopal incumbent, and in 1670, having performed worship at a conventicle near Dunfermline, where the people had armed themselves for self-defense, he was summoned before the privy council, but contrived to elude their power. On one occasion he preached at Kinkell, near St. Andrews; the people flocked from the metropolitan city to hear him, notwithstanding all the injunctions and surveillance of Archbishop Sharpe. It is said, that on Sharpe desiring the provost to send out the militia to disperse the congregation, he was informed that it was impossible—the militia had gone already as worshippers. After spending several months in Holland, in 1680 he returned to Scotland, and in the succeeding year was apprehended, and confined in the state prison upon the Bass Rock, where he died. See Crichton, *Life of Blackadder* (1823).

BLACK ACTS: the acts of the Scottish parliament of the first five Jameses, of Queen Mary's reign, and of James VI. to 1586; so called because printed in the black or Saxon characters. Black Act denotes also an Eng. law passed 1723 against outrages committed by persons with faces blackened or disguised.

BLACK ART: see Magic.

BLACK ASSIZE′: popular name commemorative of an extraordinary and fatal pestilence in Oxford, Eng., and vicinity, 1577, July 6—Aug. 12, at the close of the assizes; popularly interpreted as a divine judgment on the cruelty of a sentence by the court. Among the 510 persons said to have died, were the chief officials on the assize, most of the jury, and many members of the university.

BLACK′-BAND IRONSTONE: ore of iron in Scotland and elsewhere, in bands in the carboniferous system; mainly a carbonate of iron with much coaly matter.

BLACK BASS: a fresh-water fish, of genus *Micropterus;* body oblong, dorsal fin low, especially in its spinous part, and with its soft part longer than the anal fin; color dark, with three dark stripes obliquely crossing the cheeks. One species, the large-mouthed (*M. salmoides*), is found from Canada and the great lakes to Fla. and Tex.: another (*M. dolomieu*) from the great lakes s. to S. C. and Ark. Both

are game-fish and are esteemed for food—the small-mouthed being usually preferred by anglers, and in some localities known alone as the B.B.—The name is applied locally to the black sea-bass of the Atlantic coast, and to the black rock-fish of the Pacific coast.

BLACK BEETLE: see BLAPS: COCKROACH.

BLACK-BELLIED PLOVER, or BLACK-BREAST, one of the largest of the American plovers (*Charadrius squatarola*), also known throughout the northern part of the Old World, where it is known as 'gray' or 'Swiss' plover, and whence it goes in winter to all parts of the southern hemisphere. It breeds in the Arctic regions, and is known only in its spring and fall migrations which are carried along the coasts, so that the bird is rare throughout the interior. Great flocks sometimes visit England in autumn, spreading over cultivated fields, and remaining until the coming of frost. It is about 11.50 inches in length, and has a large round head, and large eyes, whence the gunner's names, 'bullhead,' 'beetlehead,' and 'oxeye. In general form it resembles the golden plover (q.v.), but has a distinct though small hind toe. The general aspect is gray, dusky on the back, with the throat, breast, and a large part of the abdomen black, and the tail barred with black; bill and feet black. It is a favorite object of sport, and the young migrants in autumn are delicious eating; but it is not as easily shot as most of the shore-birds. It breeds along the shores of the Arctic Ocean.

BLACK'BERRY, *blăk'bĕr-rĭ* (*Rubus*): fruit-bearing plant common in most parts of the world. It was formerly described in books, and is still widely known, especially in England, as the Bramble (q.v.). Among the species native to the United States are the Common or High B. (*R. villosus*), hairy and glandular, except upper surface of leaves, but with smoother and trailing varieties; the Low B. or Dewberry (*R. Canadensis*), slightly prickly, and ripening fruit in May; the Running Swamp-B. (*R. hipidus*), beset with small prickles, and the scanty fruit red or purple, and sour; the Sand B. (*R. cuneifolius*), leaves woolly beneath; the Low Bush-B. of the south (*R. trivialis*); and (*R. spectabilis*), which has smooth stems and purple flowers, and is found in the n.w. portion of the country. Except in the United States the B. has been little cultivated, and no sorts of special excellence have been imported. By cultivation, and careful selection of plants, the size of the fruit has been greatly increased, its quality improved, and its period of ripening lengthened. Most of our cultivated sorts have sprung up from *R. villosus*. They vary greatly in hardiness and productiveness, and in color range from a deep black, through intermediate shades, to a yellowish white. By proper choice of varieties the B. can be grown in any part of the country, and the fruiting season can be extended from the middle of July to nearly the last of Sep. Propagation is effected naturally by suckers from the roots, or artificially by root cuttings.

The former are often used, but much better plants can be secured by the latter method. Plants may be set either in fall or in spring, but in most localities the fall is preferable. The B. can be grown on almost any kind of soil, but yields the best crops when planted on a moist and moderately fertile loam. On low, rich land there is an excessive growth of canes (the ends of which are liable to be winter-killed), with a small yield of fruit; but these evils can be mitigated by severe pruning. In sandy soils properly fertilized, heavy mulching in June and July will often cause the production of a fair crop of very fine fruit. A plantation started from vigorous stock and properly cared for should come into bearing the second season and continue fruitful at least 15 years. If neglected, the plants will form an impenetrable hedge and produce little fruit. The plants need more room, but the methods of setting, pruning, and cultivating are similar to those required for the Raspberry (q.v.). Though very hardy in its natural state, the cultivated B. is sometimes attacked by rust. When this disease appears, all affected canes should be promptly cut and burned. At the n. many varieties need protection in an ordinary winter, and in very severe seasons even the so-called 'iron-clad' sorts are benefited thereby. This can be best given (after loosening the roots with a strong fork or by pulling the canes), by bending over the plants and covering the tops with soil. Where very much covering is required most of the earth can be turned on with a plow. See RUBUS.

BLACK'BIRD: general name in N. Amer. for the most of the family *Icteridæ*, but coupled with some conventional descriptive name. It is applied not to two of the sub-families, the Meadow Larks and the Orioles, but rather to the other two here occurring, the Marsh Blackbirds (*Agelæinæ*) and the Crow Blackbirds (*Quiscalinæ*). Of the first division is the BOBOLINK, known as the Reed-bird in the middle states, the Rice-bird in the s. states, the Butter-bird in the W. Indies and S. Amer. but sometimes called the Skunk B. from its colors; also the Cow B., or Cow-bird; the RED-WINGED B., sometimes known simply as the B.; and the YELLOW-HEADED B., mostly w. The Red-winged B. visits all parts of N. America, arriving in the n.e. states usually about Apr. 1. —The CROW B. group includes the Thrush B., or Rusty Grackle, n. United States and n. to Alaska; Brewer's B., or the Blue-headed Grackle, w., and w. to the Pacific; the Fan-tailed Crow B., or Texas Grackle; the Boat-tailed Crow B., or Jackdaw, s.; the Purple or Common Crow B.; the Bronzed Crow B., or Brass Grackle, far n., and Rocky Mts., and Gulf states; and the Florida Crow B., or Green Grackle. The long tails of these birds have the peculiarity in flying of slanting up to each side, so as to form a boat-like keel. The males of all the species are black, but beautifully iridescent with metallic colors. They form a transition to the *Corvidæ*, or crows proper and jays.—The B. of Britain (*Turdus* or *Merula vulgaris*)

is a single species, belonging to another family, the Thrushes (*Turdidæ*), which includes our robins and thrushes. It is common throughout Europe, and is found in n. Africa and the Azores, but in Asia it gives place to a closely related species (*T. pœcilopterus*). The male is wholly of deep black color, but the female, like some of our blackbirds, is brown. It frequents hedges, thickets, and woods; and is shy, keeping much under cover of shrubs and evergreens, thus differing greatly from our various species of B., while it agrees with our robin in its troublesome fondness for fruit. The voice of this B. is very powerful, and its song more mellow than that of the foreign thrush, but with much less variety, compass, and execution. It is often kept as a cage-bird, notwithstanding the excessive loudness of its notes; and it shows, under training, considerable power of imitation even of spoken words. The songs of our groups of B. are not to be expected to rival those of thrushes, yet the very musical whistling of the Baltimore oriole, and the liquid gurgle of the bobolink, maintain the vocal right of the family to a place among Oscines. The most of the species of B. are helpful to the farmer and gardener; the Red-winged B., however, collects in immense flocks in the fall and invades southern grain-fields.—The SAVANNA B. of the W. Indies belongs to another family.

BLACK'BREAST, a local name among American sportsmen for (1) the black-bellied plover (*Charadrius squatarola*); (2) the dunlin (*Tringa alpina*), also called 'blackheart.'

BLACK'BUCK, the common small antelope (*Antilope cervicapra*), of the plains of India and Assam. This is the typical antelope, with horns from 16 to 20 inches long, rising in an elegant spiral from the top of the head. The body is blackish brown above, sharply contrasted with white on the under parts, and with a conspicuous white ring around each eye. These handsome little antelopes go about ordinarily in family parties, but sometimes gather in large herds, and are a favorite object of sport in India, where they are usually chased on horseback with greyhounds—sometimes also with the cheeta (q.v.), or by the aid of falcons. They are so swift that the best of dogs are required to catch them. They continue numerous because they are never hunted by the native Hindus, on account of religious prejudices. Consult: Baker, *Wild Beasts and Their Ways*, and other writers upon the sport and natural history of India.

BLACK-BULLY, or BALLY-TREE WOOD (*Achras sapota*): South American tree, belonging to the nat. ord. *Sapotaceæ*. Its wood, which is greenish and very durable, is used for ship-building. The bark is febrifugal, while the seeds are diuretic and aperient.

BLACKBURN, *blăk'bėrn*, inland town of Lancashire, Eng., 21 m. n.n.w. from Manchester, 12½ m. by railway e. by s. from Preston. It stands on a stream, from which it

appears to derive its name, a branch of the Ribble. The surrounding district, formerly known as *Blackburnshire*, or *Blagbornshire*, was long very wild and dreary, but is now very populous. Coal and lime abound in it. B. had acquired some importance as a market-town in the 16th c. Its manufacturing prosperity can be traced back at least to the middle of the 17th c., when it was noted for the production of a kind of linsey-woolsey known by the name of *Blackburn Checks*, afterwards superseded by the *Blackburn Grays*, so called from their being printed unbleached. In the 18th c., the cotton manufacture became the chief industry of the town, which is now one of its chief seats, the number of cotton factories being very large, many of them employing 1,000–2,000 operatives. The value of the calicoes and other cotton goods annually produced is about $25,000,000. Many improvements in machinery for the cotton manufacture have been made in B., among which the first place in importance as well as in date must be assigned to the invention of the spinning-jenny, 1767, by James Hargreaves (q.v.), a native of the town. His invention, however, was regarded with so much dislike, that he was compelled to remove from the town, and it was not till the beginning of the present c. that it came into general use. There is a *Corporation Park* of 50 acres, part of which is 700 ft. above the level of the sea, and commands a very extensive view. The parish church is a beautiful Gothic building. The grammar-school was founded by Queen Elizabeth 1567, and occupies new buildings opened in 1884; other institutions and buildings include the exchange, chamber of commerce, town hall and municipal offices, free library, technical school, fish market, and infirmary. All public utilities are owned by the municipal corporation. Pop. 127,500.

BLACKBURN, Henry, English journalist and art critic: b. Portsea, 1830, Feb. 15. He was educated at King's College, London. Besides contributions to newspapers and magazines, he has written *Life in Algeria* (1864); *Art in the Mountains: the Story of the Passion Play in Bavaria* (1870); *Breton Folk* (1879); etc.

BLACKBURN, Joseph Clay Styles, American lawyer: b. Woodford County, Ky., 1838, Oct. 1; was graduated at Centre College, Danville, Ky., in 1857; admitted to the bar in 1859, and practised in Chicago. During the Civil War he served in the Confederate army, and after the war resumed practice in Kentucky. In 1871 he was elected to the Kentucky legislature, and in 1874 to Congress; and was a United States Senator in 1885–97 and again elected for the term 1901–7. During the presidential campaign of 1896 he was a leader in the free coinage silver movement.

BLACKBURN, Luke Pryor, American physician; b. Fayette County, Ky., 1816, June 16, d. 1887, Sept. 14; was graduated at Transylvania University, Lexington, Ky., in 1834, and began practising in that city. When

cholera broke out in the town of Versailles he went there and gave his services free during the epidemic. In 1846 he went to Natchez, Miss., and in 1848, when yellow fever appeared in New Orleans, as health officer of Natchez, he originated the first quarantine against New Orleans that had ever been known in the Mississippi valley. During the Civil War he was a surgeon on the staff of Gen. Price. In 1875, when yellow fever broke out in Memphis, he hastened to the city and organized a corps of physicians and nurses, and in 1878 gave his services to the yellow fever sufferers at Hickman, Ky. He was elected governor of Kentucky in 1879. He founded the Blackburn Sanitarium for Nervous and Mental Diseases in 1884.

BLACKBURN, William Maxwell, American Presbyterian clergyman and educator: b. Carlisle, Ind., 1828, Dec. 31, d. 1900. He became president of the University of North Dakota in 1884 and of Pierre University, South Dakota, in 1885, and president-emeritus of the last (now Huron College) in 1898. He wrote *St. Patrick and the Early Irish Church; Admiral Coligny and the Rise of the Huguenots; History of the Christian Church*, etc.; and the *Uncle Alick* series of juvenile stories.

BLACK'BURNE, Francis, Lord Chancellor of Ireland: 1782, Nov. 11—1867, Sep. 17; b. Great Footstown, county Meath, Ireland. In 1798, he entered Trinity College, Dublin. Called to the English bar 1805, to the Irish 1822, he was appointed attorney-gen. for Ireland 1830 and again 1841, master of the rolls 1842, chief-justice of the queen's bench 1846, and lord chancellor of Ireland 1852 and 1866. He thus served under both whig and tory governments, and was brought into close connection with the leading politicians on either side; while at different times he had the duties imposed on him of prosecuting O'Connell and judging Smith O'Brien. In 1867, he declined an offer of a baronetcy, and for some years he was vice-chancellor of Dublin Univ. See the Life by his son (1874).

BLACK'CAP, or Blackcap War'bler, or Blackcap Fauvette' (*Curruca atricapilla*): a bird of the great family of the *Sylviadæ*, or Warblers, and of the same genus to which the nightingale is commonly referred: see Fauvette: Warbler: Sylviadæ. It is regarded as the sweetest song-bird in Europe, except the nightingale, to which it is said to be even superior in 'its shake or trilling note.' It is a rather smaller bird than the nightingale; the female is larger than the male. The back, wings, and tail are of an ash-brown color; the chin, throat, and breast are gray; the belly, white. The upper part of the head in the male is jet-black; in the female, of a dull rust color. The feathers of the head, both in the male and female, are somewhat erected, giving the bird a hooded appearance, on account of which it is called, in Germany *the monk*. —To the same family, and of the sub-family Fly-catching Warblers (*Setophaginæ*), belongs the Black-capped Warbler of N. Amer. (*Sylvania pusilla*); bright yellow,

deeper below, shaded on the sides with olive.—The BLACK-CAPPED GNAT-CATCHER belongs to the family *Turdidæ;* it is like the blue-gray species, except the black extends beyond the forehead over the head; below white, wings brown, tail black; Tex. and s. Cal.—The BLACK-CAPPED GREENLET, family of *Vireos*, is olive, beneath white-wings and tail dark; found in Tex. and Mexico; rare. There is also a BLACK-CAPPED PETREL, long-winged sea-bird, casual on the Atlantic coast.

BLACK'CAP TITMOUSE, or CHICKADEE': N. American bird: see TITMOUSE. The Marsh Titmouse, a British bird, is sometimes called Blackcap, or Blackcap Titmouse.

BLACK CHALK: a variety of Clay-slate (q.v.) containing a considerable proportion of carbon. It is used in drawing, and is also ground down to form a black paint. It is found as a rock of a slaty texture and a bluish-black color in the island of Islay and in Caernarvonshire, also in Spain, and other parts of the world.

BLACK'COCK, or HEATH'-FOWL, or BLACK GROUSE (*Tetrao Tetrix*): species of Grouse (q.v.), abundant in Britain wherever there are moors of considerable extent, particularly where there are bogs and morasses with rank herbage, or, adjacent to the moors, natural woods or young plantations of pine and fir. Comparatively rare in the s. of England, the B. is more common towards the n., and is very plentiful in the mountainous parts of Scotland. It is found in some of the Hebrides, but not in the Orkney or Shetland Isles. On the continent of Europe, it occurs both in mountainous and marshy countries, as on the Alps and in Holland; it is found as far s. as the Apennines, and as far n. as the forests of Lapland, it abounds in Scandinavia, where it is carefully protected, the males only being killed, great numbers of which are sent to the London market; it is diffused over almost all Russia, and is found in Siberia. The male is much larger than the female, sometimes weighing as much as four pounds, while the female weighs only about two pounds; they also differ very much in plumage. The male is of a shining bluish-black color, with a conspicuous white bar on the wings below the ends of the great wing-coverts, and a mixture of black and white on the legs; there is a piece of bare scarlet skin over the eye; the outer feathers on each side of the tail are elongated and curve outwards, giving it a very peculiar appearance. The female, called the *Gray Hen*, is of a rust color, darkest on the upper parts, everywhere barred and mottled with a darker color; the tail is straight and even at the end. The young males resemble the females in plumage. The shank in this species is feathered, but not the toes. It is a gregarious bird, the different sexes, however, in winter, generally keeping in flocks by themselves. In spring, the males resort to elevated and open spots, where they crow, and also make a sound which has been likened to the wheting of a scythe, thus inviting the females to repair to them; they

strut and trail their wings like turkey-cocks, and fierce contests often take place among them. They are polygamous, and pay no attention to the females during incubation, nor do they take any part in rearing the young.—The nest is of the simplest construction, a few straws or the like, placed together among tall heath, or under the shelter of a low thick bush. The eggs, six to eight in number, are yellowish-white, speckled with orange-brown, and about two inches long. The food of the B. consists of the seeds of rushes and other plants, berries, insects, the tender shoots of heath, leaves, etc.; it sometimes visits cornfields and stubbles to feed on corn; is frequently to be found in turnip-fields in the neighborhood of plantations in hilly districts; and, at least in winter, eats the young shoots of pines, firs, birches, and alders. It is highly esteemed for the table. For the Pinnated Grouse, or Prairie Hen of N. America, a bird rather smaller than the B., see GROUSE.

It seems to be well established that hybrids are occasionally produced between the B. and other species of grouse; and also between the B. and the pheasant; but this subject, although regarded with much interest by some of the greatest naturalists, has not yet received requisite investigation, and nothing appears to be known concerning any offspring of such hybrids.

BLACK COPPER, n. [named from its being a copper ore of a bluish or brownish-black or black color]: a mineral, called also Melaconite.

BLACK CORN: book-name for *Melampyrum*, of which it is a translation. It is the French *blé* [*noir noir*, black, and *blé*, corn, wheat]. It is called also Black Wheat.

BLACK COUCH: name of a plant, *Alopecurus agrestis* (q.v.).

BLACK COUNTRY: those sections of the midland district of England which, being almost deprived of verdure by the coal and iron industries, are, so to say, blackened by them.

BLACK DEATH: one of the names given to an oriental plague marked by inflammatory boils and tumors, which in the 14th c. desolated the world. It took this name from the black spots, symptomatic of gangrene, which, at one of its stages, appeared upon the skin. For a description of the symptoms and course of the disease, see PLAGUE.

The history of the rise and progress of the B.D. is obscure, but while fable enters largely into its history, it seems safe to assign its birthplace to China; and there is a strong concurrence of testimony, that the causes which cooperated to produce it are to be sought as far back as 1333—15 years before its outbreak in Europe—in a series of great convulsions of the earth's structure, which commenced in that year, and for 26 years continued powerfully to affect the conditions of animal and vegetable life. The

precise date of the appearance of the plague in China is unknown, but from 1333–48, that great country suffered terrible mortality from droughts, famines, floods, and earthquakes which swallowed mountains, and from swarms of innumerable locusts; and in the last few years of that period, from the plague. During the same time, Europe manifested sympathy with the changes which affected the East. The order of the seasons seems at various times to be inverted; storms of thunder and lightning were frequent in the dead of winter, and there occurred great earthquakes and eruptions of volcanoes supposed extinct. The theory is, that this great tellurian activity, accompanied by the decomposition of vast organic masses, myriads of bodies of men, brutes, and locusts, produced some change in the atmosphere unfavorable to life; and some writers, speaking of the established progress of the plague from East to West, say that the impure air was actually visible, as it approached with its burden of death. 'A dense and awful fog was seen in the heavens, rising in the East, and descending upon Italy' (*Mansfeld Chronicle in Cyriac Spangenberg*, chap. 287, fol. 336). With this view of the plague is to be conjoined another regarding the causes which produced a predisposition of the inhabitants of Europe to become its victims, and which are referred to the effects on the popular health partly of scarcity, and partly of the prevalent bad habits of living. There is much probability in the theory that the plague was owing to an atmospheric poison acting on the organs of respiration, which, it will be recollected, were always those first attacked. But while impurity of the air and the state of the public health may have largely contributed to the mortality, it may be doubted whether the disease did not owe its extension almost wholly to infection and contagion, whatever causes may have originally produced it. It appears that the pestilence had in a milder form appeared in Europe, 1342, but it had passed away, and there is little reason for holding that, in the interval, it remained merely latent. The invasion of 1348 may actually be tracked from China in its advance by the various caravan routes towards the West. The n. coast of the Black Sea sent the plague by contagion to Constantinople. By contagion it reached the seaports of Italy, and thence, as from so many foci of contagion, it soon established itself over Europe. Its advance may be traced through Germany and France to England, from which it was transmitted to Sweden. It was three years from its appearance at Constantinople, before it crept, by a great circle, to the Russian territories. This fact of its spread by contagion has led to speculations as to whether, by rigid rules of quarantine, it might not have been excluded from Europe. Such rules are now at many points in force as securities against oriental plagues.

There are no proper materials for estimating the mortality which this plague produced, for it occurred before

the value of statistics was appreciated. But in China, 13,000,000 are said to have died, and in the rest of the East nearly 24,000,000. These numbers appal the imagination. Coming to Europe the horror is increased by the greater exactness of the details. London alone lost over 100,000 souls; 15 European cities lost among them about 300,000; Germany is calculated to have lost 1,244,434; Italy, one-half of its population. On a moderate calculation, it may be assumed that during its three years' rage there perished in Europe 25,000,000 human beings. Africa suffered with the rest of the known world. Everywhere was death. All animal life was threatened. Rivers were consecrated to receive corpses, for which none dared perform the rites of burial, and which in other places were cast in thousands into huge pits made for their reception. Death was on the sea, too, as well as on the land, and the imagination is quickened to the realization of the terrible mortality by accounts of ships without crews—the crews dead and putrefying on the decks of the aimless hulls—drifting through the Mediterranean, the Black and the North Seas, and cursing with the contagion the shores on which winds or the tide chanced to cast them.

The mortality caused by the plague was, however, only one of the evils to which it gave rise. Its moral effects on the survivors and the frame of society were no less momentous. Many died of fear, which among the living dissolved the ties of kindred; mothers forsook their plague striken children; the worldly became quickened to a maddening sense of sin; the religious fixed their eyes more steadily on futurity; all rushed to sacrifice their means to the church, while the ecclesiastics drew back from the gold showered over their walls, as being tainted with death. Superstition finally banded multitudes together by common means to work out the common safety. In Hungary, and afterwards in Germany, rose the brotherhood of the Flagellants, who undertook to expiate the sins of the people, and avert the pestilence by self-imposed sufferings. Originally of the lower classes, they gathered to their order, as it extended, crowds of the highest, both men and women, and marched from city to city, robed in sombre garments, with red crosses on the breast, back, and cap, and with their heads covered as far as the eyes; they went chanting in solemn processions with banners, with down-turned faces, and bearing triple scourges with points of irons, with which, at stated times, they lacerated their bodies. They at last pervaded nearly all Europe; Germany, Hungary, Poland, Bohemia, Silesia, and Flanders did them homage. See FLAGELLANTS. Suffice it that the order was not suppressed till the pope, at the instigation of several crowned heads, prohibited throughout Christendom their pilgrimages, on pain of excommunication. While the wanderings of the Flagellants threw society into confusion, and helped to spread the plague, the horrors of the time were further heightened by the fearful persecutions to which the Jews were subjected, from a popular belief that the pestilence was owing to their

poisoning the public wells. The people rose to exterminate the Hebrew race of whom, in Mayence alone, 12,000 were cruelly murdered. They were killed by fire and by torture wherever they could be found, and for them to the terrors of the plague were added those of a populace everywhere infuriated against them. In some places, the Jewish people immolated themselves in masses; in others, not a soul of them survived the assaults of their enemies. No adequate notion can be conveyed of these horrors. To aggravate the pestilence, the poison-panic made the people shut up their wells. With terror of poison and of plague in a state of society rude at the best, but then further disorganized, such means as were available to mitigate or prevent the sufferings of the people were rendered altogether nugatory.

It would be useless to attempt to give any notion of the effects on society of this plague; how during it some, like people in sieges, came to be callous, and some, like thieves under the gallows, to regard the desolation only as it afforded opportunities for plunder and indulgence. The whole phenomenon would form a fine study for the social philosopher and psychologist. We must content ourselves here with referring the reader to the *Decameron* of Boccaccio for a description of the plague at Florence, which, for vividness and particularly of observation, almost equals Thucydides's account of the plague at Athens. In Bulwer's *Rienzi*, also, an account of the plague will be found. The reader should also consult Hecker's *Epidemics of the Middle Ages*, translated for the Sydenham Soc. Accounts of the plague have been left us by the physicians Guy de Chauliac and Chalin de Vinario But perhaps Boccaccio's is the best of the whole. The B. D. afterwards more than once appeared in Europe, but never with the same virulence or duration.

BLACK DUCK: see DUCK.

BLACKEN, v. *blăck'n* [from BLACK]: to make black; to soil; to defame. BLACKENING, imp. *blăk'nĭng*. BLACK'-ENED, pp. *-ĕnd*. BLACKENER, n. *blăk'nėr*, one who. BLACKING, n.: see under BLACK.

BLACK FISH: name variously applied; often to a species of the mammalian dolphin and porpoise family, the *Globicephalus intermedius* a 'killer' whale of the Atlantic coast; ordinarily 15–18 ft. in length. They swim in large schools, at times several hundred, and, if not self-stranded, are often driven inshore by fishermen, and captured. They feed on schools of valuable food-fish. Another species is found on the Pacific coast (*G. Scammonii*), formerly abundant off Lower Cal.—The B. or TAUTOG (*Tautoga onitis*), an esteemed food-fish, especially in New York, ranges from New Brunswick to S.C., and is known s. as the Moll, Will George, Saltwater Chub, and Oyster-fish, in different localities.

BLACK FLUX: mixture used in chemical operations. It is prepared by heating in a covered crucible ordinary

or crude cream of tartar, or the bitartrate of potash ($KHC_4H_4O_6$), when the tartaric acid ($H_2C_4H_4O_6$) is decomposed and charred, forming carbon dioxide (CO_2), which remains in combination with the potash as carbonate of potassium (K_2CO_3), accompanied by much free carbon. This intimate mixture of carbonate of potassium and carbon, called B. F., is a fine black powder of great service in the fluxing of metallic ores, as of lead (q.v.), and the separation of the metal therefrom. The B. F. is likewise used as the raw material from which, on the application of heat in iron vessels, the metal potassium can be obtained.

BLACK FOREST (Ger. *Schwarzwald*): wooded mountain-chain in Baden and Würtemberg running from s. to n. along the w. side of Swabia, parallel with the course of the Rhine after its great bend near Basel, and often only a few m. from it. The Rhine also bounds it on the s. and the level country between the Enz and the confluence of the Neckar with the Rhine borders it on the n.; lat. 47° 30′–49° 30′ n., long. 7° 40′–9° e. The chief rivers rising in the B. F. are the Danube, Neckar, Murg, Kinzig, Elz, Enz, and Wiessen. The B. F. attains its greatest elevation in the bare and round-topped Feldberg (about 4,903 ft. high), near the source of the Wiessen and the celebrated Hölle (Hell) Pass, a narrow valley shut in by mountains in the vicinity of Neustadt. The great mass called the Kaiserstuhl (Emperor's Chair), near Breisach, is quite isolated. As to the geological character of the B. F., primitive granite and gneiss form its core, porphyry is found on its sides, and sandstone along its highest ridges, as well as at its base. Silver, copper, cobalt, lead, and iron are found in greater or less quantity in its principal chain, which is luxuriantly wooded, its name Schwarzwald being derived from the dark-tinted foliage and immense number of its fir-trees. The B. F. is also rich in mineral waters, as, e.g., the baths of Baden-Baden and Wildbad (q.v.). On the Rhine side, the descent is precipitous, but towards the Danube and the Neckar it is gradual. Among its numerous valleys, the Murgthal is most famous for its normal beauties. The w. slopes are studded with vineyards. Summer rye, oats, and potatoes are cultivated in some parts of the B. F.; but it is with difficulty, and the rearing of cattle is prosecuted with much greater success. This, and the manufacture of articles of wood, are the chief industry of the inhabitants.

Two of the passes of the B. F., the Kniebis and the Hölle, acquired considerable celebrity during the wars of the French Revolution. The first, on the borders between Baden and Würtemberg, was taken by the French, 1796 and 1797; the Hölle is known in connection with Moreau's retreat, 1796.

BLACK FRIARS: see DOMINICANS.

BLACK FRIDAY: see PANIC.

BLACKGUARD, n. *blăg′gârd* [*black*, in reference to their

dirty work, and *guard:* but. F. *blagueur*, an insolent braggart—from *blague*, loud, abusive talk: comp. Gael. *blagair*, an impudent boaster]: a name originally given in derision to the lowest class of menials or hangers-on about a court or great household; a mean, low fellow; one who uses foul language; a scoundrel: V. to defame; to employ foul or abusive language in speaking of any one. BLACK'-GUARDING, imp. BLACKGUARDED, pp. *blăg'ĕr-dĭd*. BLACK'-GUARDISM, n. *-ĭzm*, the conduct or language of a blackguard.

BLACK GUM TREE: see TUPELO.

BLACK HAWK: 1767–1838: famous chief of the Sac and Fox Indian tribes: b. Kaskaskia, Ill. At the age of 15 he joined the ranks of the braves. He became chief of his tribe (the Sacs), on the death of his father, about 1788. In 1804 the Sacs and Foxes sold their land, extending 700 m. along the Mississippi, to the United States in consideration of an annuity of $1,000. Black Hawk repudiated this treaty, claiming that the chiefs were drunk when they signed it, and in the war of 1812 he joined the English army with 500 warriors. Defeated and forced to ratify the treaty, he still remained inflexible in his resolution to retain possession, with his tribe, of the homes of their ancestors. When compelled to leave, 1831, he again resorted to war and massacre, was completely overwhelmed at the river Bad Axe, 1832, Aug. 1, 2, and surrendered Aug. 27. He, his two sons, and seven other braves were taken as hostages, carried as a show through our principal cities, and then confined at Fortress Monroe until 1833, June 5. He died in his camp on the Des Moines river.

BLACK'HEATH: a high-lying open common, in the county of Kent, Eng., five m. s.e. of London, near Greenwich Park. It commands a fine view of great extent, and being a healthy tract, many villas have been built on its margin. It is a favorite holiday resort for Londoners, much used for cricket playing. The Roman road to Dover crossed it. On it stands Morden College, founded 1695 by Sir J. Morden for unfortunate merchants, and with a revenue of £5,000. B. was formerly the scene of several insurrections, including those of Wat Tyler, 1381; and Jack Cade, 1450. Here the Danes encamped, 1011; the Londoners welcomed Henry V. from Agincourt; and Charles II., on his way from Dover, met the army of the Restoration. See Dr. Frake's *History of the Hundred of Blackheath* (1886).

BLACK HILLS: mountainous region in s.w. South Dakota, extending into the e. part of Wyoming; long. 103° to 105°. It was purchased from the Indians in 1876, for whom it had been one of the finest hunting grounds in the west. In 1877–8, thousands of miners went there, and in 1880 there had already sprung into existence three towns, viz. Deadwood, pop. (1900) 3,498; Lead City, pop. (1900) 6,210; and Central City (since abandoned). Gold and silver have since been mined there in large quantities. Consid-

erable deposits of tin were found in the B. H., chiefly in Custer and Pennington cos., S. D., 1882, and the region is also rich in copper, lead, iron, and mica. Thrifty farmers have settled there, and many of them have good farms and fine improvements. Good school houses have also been built in different settlements.—See SOUTH DAKOTA: WYOMING.

BLACK HOLE: appellation familiarly given to a dungeon or dark cell in a prison; associated with a horrible catastrophe in the history of British India—the confinement of a party of English in an apartment called the 'Black Hole of Calcutta,' on the night of 1756, June 18. The garrison of the fort connected with the English factory at Calcutta, having been captured by the nabob Suraja Dowlah, 146 in number, were confined in an apartment 20 ft. square. This cell had only two small windows, and these were obstructed by a veranda. The crush of the unhappy sufferers was dreadful; and after a night of excruciating agony from pressure, heat, thirst, and want of air, there were in the morning only 23 survivors and they were either stupified or raving. See INDIA.

BLACKIE, *blăck'ĭ,* JOHN STUART: Scottish philologist and philosopher: 1809, July—1895, Mar. 2; b. Glasgow, He was educated at Aberdeen and Edinburgh; then for 2 years studied philology in Göttingen, Berlin, and Rome; was prof. of Lat. literature at Aberdeen 1841–52, and then of Greek at Edinburgh till 1882. The wide range of his studies is indicated by the following partial list of his writings: *Pronunciation of Greek* (1852); *Discourse on Beauty* (1858); *Songs and Legends of Anc. Greece* (1857); *War Songs of the Germans* (1870); *Self Culture* (1874); *Natural Hist. of Atheism* (1877); *Wisdom of Goethe* (1883); *The Land Laws* (1885), favoring 'the land for the people'; *The Scottish Highlanders* (1885); *Life of Robert Burns* (1887); *Essays on Subjects of Moral and Social Interest* (1892); giving his conclusions on education, religion, politics, etc. B. presided at the meeting of the Pan-Presb. Alliance at Toronto 1892.

BLACKING: the article employed in blacking boots and shoes, usually contains for its principal ingredients oil, vinegar, ivory, or bone black, sugar or molasses and strong sulphuric acid, though every manufacturer has his own recipe. Blacking is used in either liquid or paste form, but both are obtained from the same ingredients, the only difference being that in making the paste a portion of the liquid is witheld.

BLACK JACK: name given by miners to Blende (q.v.). Also, name in former times for a kind of drinking flagon.

BLACK JACK, or NIGGER CATERPILLAR: see TURNIP SAWFLY.

BLACK JACK TREE: see OAK.

BLACK LEAD, or GRAPH'ITE, or PLUMBA'GO: a mineral consisting chiefly of carbon, but containing also more or less of alumina, silica, lime, iron, etc., to the extent of

1 to 47 per cent., apparently mixed rather than chemically combined. B. L. is the popular name, and that by which it is generally known in the arts; graphite is that generally preferred by mineralogists.—The name B. L. seems unfortunate, as no lead enters into the composition of the mineral. It sometimes occurs crystallized in short imbedded hexagonal prisms; but generally massive, and more or less radiated, foliated, scaly, or compact. It is of a grayish-black color, with a somewhat metallic lustre, and is perfectly opaque. It is greasy to the touch, and is a perfect conductor of electricity. It is found in primary and transition rocks, as in gneiss, mica-slate, quartz-rock, greenstone, and clay-slate, and somewhat abundantly in various parts of the world. It is so far incombustible that it burns with much difficulty even before the blow-pipe, on which account it is much used for the manufacture of crucibles or 'melting-pots,' which withstand great heat. These are not, however, made of mere B. L., but of B. L. in powder, mixed with half its weight in clay. B. L. is employed for making pencils (q.v.). It is also extensively used to give a black gloss to iron grates, stoves, railings, etc., and to diminsh the friction of the belts and other parts of machinery. Much B. L. is obtained at Borrowdale, Cumberland, Eng.; there are also great deposits in Missouri and in Siberia.

BLACK LETTER (Black Letter): name commonly given in the United States and England to the types which on the continent of Europe are generally known as Gothic. The first printed books imitated every peculiarity of the contemporary manuscripts; and as printing was first practiced in Germany and the Netherlands, the first types were copies of the letters in use in those countries in the middle of the 15th c. Two sorts of letters have been employed in the writings of Western Christendom. What have been called Roman letters prevailed from the 5th to about the close of the 12th c., when they gradually began to pass into what have been called Gothic letters, which continued till the 16th c., when, in most European countries, they were superseded by Roman letters. The first types, as has been said, were Gothic, and their use spread with the art of printing into various European states. In France and Italy, they were slightly modified by cutting off some of their rougher points. As time went on they were still further modified, until they assumed the shape to which the name of Roman letters has since been given; and these Roman letters in no long time spread from Venice all over the w. of Europe. Although thus supplanted in general use, the Gothic or B. L. was long retained for special purposes, such as, in England, the printing of Bibles, prayer-books, proclamations, and acts of parliament. Books in B. L., being the earliest, are highly prized by antiquaries and bibliomaniacs, who are hence sometimes spoken of as 'black-letter' devotees.

A form of the B. L. still continues in general use in Germany; but in recent years there has been a growing tendency to employ the Roman letter. See PALEOGRAPHY.

BLACK LIST: name familiarly applied to printed lists relative to insolvency, bankruptcy, and other matters affecting the credit of firms and individuals, and which are circulated for the private guidance of the mercantile community. In the U. S. the term is also applied to a list of employees who have been discharged by a firm or corporation and against whom some objection is made and reported to other firms or corporations to prevent them from obtaining employment. Blacklisting is made a punishable offense by the laws of some States.

BLACK'LOCK, THOMAS, D.D.: 1721–91; b. Annan, Scot. The child of humble parents, and deprived of sight before he was six months old, he won for himself before he reached middle age the designation of an accomplished scholar, a cultivated thinker, and, for those times, a respectable poet. After going through the necessary course of academic study in Edinburgh, he was licensed as a preacher of the Established Church, 1759, and in 1762 was ordained minister of Kirkcudbright. The determined resistance of the congregation to the appointment, based apparently on his too philosophical and 'moderate' style of preaching (joined perhaps to the fact that he was the intimate friend of David Hume), led to a litigation, to his sensitive mind extremely distressing, and he resigned the charge in consideration of a small annuity. After this, he resided in Edinburgh till his death, occupied chiefly in teaching a limited number of boarding-pupils. A letter from him happily arrested Robert Burns on the eve of his departure for the West Indies, and thus, to all human appearance, saved from oblivion the greatest lyrist that the world has seen. A collected edition of B.'s poems was published, 1793, with a biographical sketch by Henry Mackenzie.

BLACK'MAIL: tribute formerly exacted by freebooting chiefs from the people in the border counties of England and Scotland, and along the Highland border. It is mentioned by Abp. Hamilton in his *Catechisme* (1552), and by Maitland in his *Thieves of Liddesdale* (abt. 1561), and it persisted until about the middle of the 18th c. Theft and robbery were not then regarded in the Highlands as they are now: to carry off the cattle of a neighbor was perhaps only wreaking out an old family quarrel or clan dispute, or making reprisals for some severity of persons in power. Certain it is that men of good standing gave a certain degree of protection to notorious cattle-lifters. In these circumstances, a class of men rose up who professed to take upon themselves the duty of protecting the property of individuals, on the payment by them of a percentage on their rents, generally 4 per cent They were not low men who did so; nearly all of them had good Highland pedigrees, and externally as honorable persons, though there was only too great reason to suspect that they encouraged and profited by robberies, in order to make the B. a necessity. The celebrated Rob Roy was, about 1730, a notable levier of B in the southern Highlands and adjacent Lowland districts. A little later, Coll M'Donell of Barrisdale, a cadet

of the Glengarry family, was equally noted further north. When one of the payers of the B. suffered what was called a *hership*, the levier of the impost, being quickly informed of what had happened, busied himself to recover the lost cattle, and if he failed, he held himself bound to pay an equivalent. Mr. Lapslie, minister of Campsie, Stirlingshire, in his Statistical Account of the parish, 1795, relates that his father, John Lapslie, was a farmer who paid B. in 1744 to M'Gregor of Glengyle, the nephew of Rob Roy. The engagement was that he should make good losses, if the number of sheep stolen exceeded seven, for anything less was held as not a *hership* or *lifting*, but merely a *picking*. Early in 1745, fifteen were stolen, and M'Gregor was honorably preparing to replace them, when the breaking out of the rebellion, in which he became involved, deprived him of the power of fulfilling his engagement, and put an end to his self-created wardenship of the Highland borders. After that period, law was vigorously enforced in the Highlands, and B. ceased. Also rents reserved, payable in work, grain and the like were called "blackmail" (*reditus nigri*), in distinction from white rents (*blanche firness*) which were rents payable in silver. Now used to signify the obtaining of money by a demand accompanied by threats of prosecution, exposure or injury in case of non-payment.

BLACKMAR, *blăk'mâr*, Frank Wilson, economist; b. Springfield, Pa., 1854, Nov. 3. He graduated at the Univ. of the Pacific 1881, and took his Ph. D. degree at Johns Hopkins 1889. Since 1889 he has been professor of sociology and economics in the Univ. of Kansas and dean of the Graduate School. He has been a frequent contributor of articles and reviews to the journals devoted to history and economics. Publications: *Federal and State Aid to Higher Education in the United States* (1890); *Spanish Colonization in the Southwest* (1890); *Spanish Institutions in the Southwest* (1891); *The Story of Human Progress* (1896); *History of Higher Education in Kansas* (1900); *Charles Robinson: The Free State Governor of Kansas* (1900); *The Study of History and Sociology* (1890); *Economics* (1900); *Life of Charles Robinson, the First Governor of Kansas* (1902); *Elements of Sociology;* etc.

BLACKMORE, *blăk'mōr*, Sir Richard, English physician and poet: b. probably about 1650; d. 1729. In 1668 he entered the Univ. of Oxford, and in 1674 took the degree of B. A. Having traveled abroad he took the degree of M.D. at Padua, and was admitted Fellow of the Royal College of Physicians in 1687. In 1697 he had risen to so much eminence as a physician as to be appointed physician to King William, who knighted him. In the preceding year he had made himself known as a poet by the publication of his heroic poem of *Prince Arthur* which was soon followed by *King Arthur*. In 1700 he published a poem entitled a *Satire on Wit*, in which he assailed his literary contemporaries on the score of irreligion and grossness.

The worthy man became the common butt of his day, being attacked by Dryden, Pope, and Swift, not to mention others. The work which produced him the greatest reputation was *The Creation*, a poem in seven books, which went through several editions, and was greatly applauded, but is, generally speaking, very tamely elaborate.

BLACKMORE, Richard Doddridge: b. Longworth, Berkshire, Eng., 1825, June 9; d. 1900, Jan. 20: novelist. He graduated at Oxford Univ. 1847; then studied law and practiced as a conveyancer. His first published work was *Poems by Melanter* (1854), the *pseudonym* being the Gr. word *melas* (black) in the comparative degree—'more black.' Other volumes of verses followed 1855, 60, 62, and 71. His first novel, *Clara Vaughan*, appeared 1864; his first distinct success as a novelist was won 1869 by *Lorna Doone: a Romance of Exmoor*. The plot of this story is good and well developed; the style, with the quaint and pleasing flavor of the time of James II., has a very remarkable poetic grace and charm, and the figures have much life and movement. Other novels by B. are: *Cradock Nowell, a Tale of the New Forest; The Maid of Sker; Alice Lorraine, a Tale of the South Downs; Cripps the Carrier; Erema; Mary Anerley; Christowell; Sir Thomas Upmore; Springhaven; Perlycross; Dariel;* etc. He has also published a translation of Virgil's *Georgics* (1862 and 1871). Among his volumes of original poetry are *Poems by Melanter* (1854); *The Bugle of the Black Sea* (1855); and *The Fate of Franklin* (1860). Mr. Blackmore's work is characterized by vivid and accurate descriptions of nature and of rurual life. His male characters are well drawn, and, though not the products of subtle analysis, they are boldly marked and consistent; with his women, however, he is less successful. He is at his best in historical novels, such as *Lorna Doone*, his greatest work, and *Alice Lorraine*.

BLACK MOUNTAINS: a portion of the Appalachians in the w. part of North Carolina, mostly in Yancey co., extending within half a dozen miles of the Blue Ridge. It is named from the luxuriant growth of its evergreen vegetation. It is the most elevated region of the United States e. of the Mississippi, being the culminating portion of the Appalachian system; and it has more than a dozen peaks that are higher than Mt. Washington, N. H. The Black Dome, formerly called Mitchell's Peak, or Mt. Mitchell, is 6,732 ft. in height, and is generally conceded to be the highest of the group. Clingman's peak is 6,660 ft. high. The climate in the w. section of North Carolina corresponds in general to northern France and Belgium, but among these mountains it is colder.

BLACK'POOL: flourishing town in the township of Layton-cum-Warbreck, county of Lancaster, Eng.; now a

very considerable place, on the coast of the Irish Sea, between the estuaries of the Ribble and the Lune, 4 m. from Poulton-le-Fylde, 18 m. from Preston. It is a noted watering place and the numbers who resort here during the season far exceed the permanently resident inhabitants. Upwards of 100,000 visitors annually come from all parts of the kingdom. It has a branch railway connecting it with the Preston and Wyre railway, which affords easy access from Preston, Liverpool, Manchester, and all parts of the kingdom. There is also another railway connecting it with Lytham, another favorite bathing-place on the Ribble, about 7 m. to the south. There are terraces of houses elegantly built, many large hotels, a promenade 3 m. long, with electric trains, a winter-garden, free library, several theatres, a tower on the Eiffel model 500 ft. high, and the varied attractions of a sea-side summer resort. There is no trade or manufactures, the boarding-house keepers depend solely on the large influx of visitors. Fishing is the employment of many during the winter months. Pop. 48,000.

BLACK QUARTER, known also as Black Leg, Quarter Evil, and by various other names: disease of cattle appearing in somewhat various forms, but always malignant and contagious, and capable of being communicated to man by inoculation. It is due to the presence of a bacillus which can live in the soil for months and retain its vitality under any changes of climate. Cooking does not destroy the poison in the flesh of animals which have been affected by this disease, and many people have lost their lives by eating such meat. Mere contact with a sick animal, or with the carcass of one that has died, often serves to communicate the disease; it is also spread by mosquitoes and other insects. The disease appears most frequently in spring or autumn, and usually attacks animals which are young and thrifty. It appears suddenly, and sometimes is almost immediately fatal, though many cases linger for several days. The symptoms vary, but there is usually a sudden lameness and always fever, and pain. Tumors appear which are at first extremely tender, but which afterward become insensible, and from which bloody matter exudes. The lungs are congested, and decomposition commences before the animal dies. The malignant nature of the disease and the quickness with which it runs its course at the commencement of an outbreak makes remedial measures of but little value. Cases which appear after a part of the force of the malady has been spent are sometimes cured by treatment with tonics and antiseptics; but recovery is very slow, and the usual health is not always regained. On the appearance of this disease a competent veterinarian should be called at the earliest possible moment. Preventive measures consist of draining wet and malarious pastures; or, if this is impossible, removing the animals to higher lands as soon as the hot and dry weather comes; in protecting the animals from chills; in avoiding sudden changes from poor to rich pasture; and in supply-

ing abundance of pure water. Pasteur's method of inoculation with weakened virus is sometimes successful, but must be carefully done or it will communicate the disease. Hypodermic injections of diseased blood which had been heated to 150° have given good results, and the addition of a small quantity of carbolic acid and chlorate of potassa to the drinking water of exposed animals has seemed beneficial. Stables in which diseased animals have been kept must be thoroughly disinfected, and the carcasses of those which have died should be covered with quicklime and deeply buried. Before and after contact with a sick animal, the hands should be washed in dilute carbolic acid.

BLACK RIVER, New York: a stream about 125 m. long, rising in Herkimer co., about 25 m. n.n.e. of Utica, flowing n.w. through Oneida and Lewis cos., to the Great Bend in Jefferson co., whence it flows w. and empties through Black River bay into Lake Ontario. It has a fall of 63 ft. at Lyons Falls, whence it is navigable to Carthage, a distance of 40 m. Black River canal, from Lyons Falls to Rome, affords communication with the Erie canal. Black river at Watertown, 6 m. from its mouth, is 175 ft. in breadth.

BLACK RIVER, or Big Black River: largest tributary of the White river, which it enters at Jacksonport, Ark., after a course of nearly 400 m. It rises in the s.e. of Missouri, has a s.e. course in that state, a s.w. course in Arkansas. Small steamers ply on the lower 100 miles.

BLACK-ROD, n. *blăk'rŏd*, in Britain: an usher, high officer of the queen's household and of the house of lords; appointed by letters patent; so called from the black staff which he carries as a badge of office—he is also the usher of parliament. He is chief gentleman-usher to the sovereign, also usher of the order of the Garter. His principal duty is (himself, or by his deputy the yeoman-usher) to summon the house of commons to the peers when the royal assent is given to bills, or when royal speeches are read; and to take into custody any peer guilty of breach of privilege. His income is derived from certain fees under the regulation of the house; and the appointment of messengers, door-keepers, servants, etc., rests with him. This patronage was at one time very lucrative, but new arrangements have made it much less so.

BLACK ROOD OF SCOTLAND: an ancient relic, formerly belonging to the Scottish kings. When the Anglo-Saxon Princess Margaret, who became the wife of King Malcolm Ceanmohr, landed in Scotland, about 1070, she brought with her what was regarded as a priceless relic —a cross of gold, elaborately wrought in the form of a casket, about a span long, containing what was believed to be a piece of the true cross, set in an ebony figure of the Saviour, richly decorated with gold. Of its earlier history, nothing is known, but St. Margaret bequeathed it as an inheritance to her children. It was kept as an heirloom of the kingdom, in the royal treasury in the castle of Edin-

burgh, and with the other regalia and muniments of Scotland, was delivered up to King Edward I., 1291. When the long struggle between England and Scotland was at last ended by the peace of Northampton, 1328, the B. R. was restored to Scotland as one of the national treasures. When King David II. invaded England, 1346, he carried the B. R. with him, in the belief that such a holy relic would insure safety to his person or victory to his arms. On his defeat and capture under the walls of Durham, the B. R. of S. became the prize of his conqueror, Sir Ralph de Neville, Lord of Raby, by whom it was offered, with other spoils of the battle, at the shrine of St. Cuthbert, in the cathedral of Durham. There it hung till the Reformation, when all trace of it disappears.

BLACK or EUXINE SEA (*Pontus Euxinus*, or 'hospitable sea,' of the ancients, Kara Deniz of the Turks, Mauri Thalassa of the modern Greeks, and Tschernoje Moré of the Russians): an inland sea between Europe and Asia, extending from lat. 40° 45′ to 46° 45′ n., and from long. 27° 30′ to 41° 50′ e. In shape it bears a clumsy resemblance to the human foot. Its greatest length from e. to w., on the 42d parallel, is about 700 m., and its greatest breadth, near the w. end, about 380 m. On the s.w. extremity it communicates by the Bosporus, the Sea of Marmora, and the Dardanelles, with the Mediterranean, and on the n. e. by the Straits of Yenikale with the Sea of Azof. The B. S. drains nearly one-fourth of the surface of Europe, also about 100,000 sq. m. of Asia. Through its whole extent it has but one island, and that a small one, opposite the mouths of the Danube, called *Adassi*, or Isle of Serpents, on which is a light-house. In the centre of the B. S. there are no soundings at 150 fathoms, nor are there shoals along the shores, except at the entrance of the Bosporus; the navigation of the B. S. ought, therefore, to be particularly easy and safe. It is so in summer; but in winter, being inclosed on every side, it becomes the scene of conflicting winds, and of storms which, though of short duration, are terrible while they last. In such a storm, 1854, Nov. 14, about forty vessels of the allies were either totally wrecked or seriously injured, nearly 1,000 lives were lost, and property worth millions destroyed.

All the coasts are high, with good harbors, except between the mouths of the Danube and the Crimea; there the land is low, and the danger of navigation greatly increased in winter by the presence of floating ice; for, from the many large rivers which flow into the B. S. and Sea of Azof (Danube, Dniester, Bug, Dnieper, Don, and Kuban, in Europe; and the Kizil-Irmak and Sakara in Asia), the waters are fresher, and consequently more easily frozen than those of the Mediterranean. The shores from Odessa to the Crimea are ice-bound during Jan. and Feb.; and though the harbor of Odessa is never frozen up, yet the drift-ice frequently renders the entrance to it dangerous.

There is no tide in the B. S.; but the large rivers flowing into it give rise to currents, which are particularly

strong in spring when the snows melt, and the accumulated moisture of the whole winter is drained off the land. The great current, which, passing out of the Sea of Azof round the Crimea, flows first s.w., then n.w., and again due w., is turned s. by a current from the Dnieper and Dniester; the two currents are afterwards met by another from the Danube, and then, all united, rush towards the Bosporus. The Bosporus, however, is not wide enough to admit the entire volume of water pressing into it; and a portion of the main current is consequently diverted to the coast of Asia, where it is strengthened by new accessions. This, which is the normal course of the currents in the B. S., is modified by the winds, and by local circumstances.

The most important ports on the B. S. are those of Odessa, Kherson, Euptoria, Sebastopol, Batum, Trebizond, Samsun, Sinope, Varna, etc.

Several kinds of sturgeon are caught in considerable quantities in the Straits of Yenikale, and other fish of various kinds are abundant.

The B. S. has been navigated from a very early period. Its original name (supposed to have arisen from the dangers such an expanse of sea offered to early navigation, as well as from the fact that savage tribes dwelt upon its coasts) was *Axine*, or 'inhospitable' sea, afterwards changed by the Greeks to *Euxinus*. In the time of Xerxes, large quantities of corn were exported from its ports to Athens and the Peloponnesus. The Romans and Byzantine emperors, and also the Genoese, had large traffic on the Black Sea. When the Turks captured Constantinople, all but their own ships were excluded from its waters until the treaty of Kinarji, 1774, when the Russians obtained the right to trade in it. Ten years later, Austrian ships were privileged to trade here; and by the Peace of Amiens, 1802, British and French ships were admitted. The undue preponderance of Russia in the B. S. was the main cause of the Crimean war. By the Treaty of Paris, 1856, the sea was declared neutral, and Russia was forbidden to keep armed vessels on it. In 1871, the sea was deneutralized by a conference of the powers in response to a protest from Russia.

BLACK SILVER, or STEPHANITE, *stĕf'an-īt:* a mineral consisting of silver 68.5, sulphur 16.2, antimony 15.3; found with other silver ores in many different parts of the world; notably in Mexico, Saxony, the Hartz Mountains, Idaho, and in the Comstock lode in Nevada. It is sometimes called *brittle silver ore.*

BLACKSMITH, n. *blăk'smĭth* [see BLACK]: one who manufactures articles from iron.

BLACK SNAKE (*Zamanis constrictor*, family *Colubridæ*): species of snake common in the e. United States and south. It is shining black above, slate-color below, with white throat and chin; length 4–5 feet. The young are olive, with black rhomboid blotches. It is remarkable for its great agility. It moves along the ground

with a swiftness equal to that of a horse, glides over bushes, and climbs trees. It feeds on small quadrupeds, birds, frogs, etc.; frequently plunders poultry-yards of eggs; and enters dairies to drink milk or cream. It has no poison-fangs, and is not injurious, though it is not slow to bite. It is easily tamed.—There is a quite different and very venomous B. S. common in Australia. See AUSTRALIA.

BLACKSTONE, *blăk'stōn:* town in Mass., on the New York, New Haven, and Hartford railroad, and on the Blackstone river, at the state line in Worcester co., a portion of the town lying in Providence co., R. I. 18 m. n. w. of Providence and 36 m. s.w. of Boston, it has good trading advantages. It has half a dozen churches, an important manufactory of cotton prints, and manufactures of woolen goods, shoddy, and scythes. Pop. (1890) 6,138; (1900) 5,721; (1910) 5,648.

BLACKSTONE, Sir WILLIAM: 1723, July 10—1780, Feb. 14; b. London; posthumous son of a silk-mercer: he was a commentator on English law. At the age of 15, having obtained a scholarship from the Charterhouse School, where he was educated, he was sent to Pembroke Hall, Oxford. There he obtained a second scholarship, and remained till, in 1744, he was admitted a fellow of All Soul's College, when he removed to London, to attend the courts of law with the view of qualifying himself for his future profession. In 1746, at the age of 23, he was called to the bar, but failed to attract either notice or practice. Upon the death of an uncle, 1749, he was appointed recorder of Wallingford, Berkshire; but in 1753 he went to Oxford, where he delivered a course of academic lectures upon the law of England. A few years later, a Mr. Viner having left a sum of money to endow a chair of English law in the Univ. of Oxford, B. was, in 1758, appointed first Vinerian professor. The following year B. returned to Westminster; and as the doctrines which he had taught as a lecturer had been such as to commend him to the notice of the tory government of that day, he obtained its patronage, and in 1761 was made a king's counsel. Shortly afterwards he was appointed principal of New Inn Hall, Oxford. Other honors followed fast, and he became successively member of parliament, bencher of the Middle Temple, and solicitor-gen. to the queen. In 1765, B. published the first vol. of his lectures, and the remaining three vols. 1765–69. These lecturers form his celebrated *Commentaries on the Laws of England.* His practice continuing to increase, he resigned, 1766, his Oxford appointments. Four years later, he was offered the solicitor-generalship, and, after declining it, was knighted, and made a justice of the court of common pleas. The remaining years of his life were spent in the discharge of his duties as a judge.

The fame of B. rests entirely upon his *Commentaries.* His other literary works were inconsiderable, and his

merits as a pleader or judge were not such as, of themselves, to have made his reputation outlive himself. As a commentator, he had many excellences. His style was in general clear and gracefully ornate, and his illustrations pleasing and felicitous. While he confined himself to exposition—to the accurate statement in scholarlike English of what had heretofore lain buried in the cumbrous language of lawyers like Littleton—B. was unsurpassed, and rendered an important service to the country. But he was ambitious of combining with this exposition the higher task of explaining the reasons for the law, as well as its merits and defects. For this survey of the law, from the legislator's point of view, he had not the requisite qualifications. His knowledge of English history was, as Hallam remarks, superficial, and his study of the philosophy of law had been imperfect. With the works, indeed, of Montesquieu and Beccaria he was acquainted; but the mode in which he quotes them shows that he had imbibed nothing of their spirit. The method followed in the *Commentaries* was utterly unscientific and had not even the merit of originality. It was taken, with little alteration and no improvement, from Sir Matthew Hale's *Analysis of the English Law.* Possibly the haste with which the *Commentaries* must have been composed, being originally in the form of lectures, may have led to some of their imperfections. Since B.'s death, the *Commentaries* have been very frequently reprinted, perhaps the best editions being those of Christian. As a century has elapsed since they were composed, so many alterations are requisite to adapt them to the existing state of the law that it may be said that their purpose has been served, and that they are now valuable chiefly as materials for history.

BLACK STONE EXAMINATIONS: see GLASGOW UNIVERSITY.

BLACK WAD: name given by miners to the native black oxide of manganese, and principally to an impure and earthy variety of ore. See MANGANESE.

BLACK'WALL: suburb of London, in Middlesex, at the junction of the Lee with the Thames, four m. e.s.e. of the metropolis. It has foundries, ship-building yards, and the East and West India docks. A railway, four m. long, mostly on a brick viaduct above the streets, connects B. with the city of London. To avoid the dangers and delay of the 'Pool,' many passengers proceed by this railway to embark in steamers at B., instead of going on board at London Bridge.

BLACK WAR'RIOR: river formed, in the n. of Ala., by the junction of the Mulberry and the Locust. Almost from the very point of confluence it is navigable for steamboats, till, after a course of more than 150 m., it enters the Tombigbee, which again is navigable for large vessels all the way to Mobile on the Gulf of Mexico, nearly 200 m. more. Along its course are found coal, iron, and other valuable minerals.

OCT 21 1911

One copy del. to Cat. Div.

OCT 21 1911

LIBRARY OF CONGRESS
0 033 261 269 4